

AMERICAN NURSERYMAN

The Nurseryman's Forum To Make America More Beautiful and Fruitful

NOVEMBER 15, 1947



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AMERICAN NURSERYMAN

F. R. KILNER, *Editor and Publisher*

Joan L. Kilner, *Assistant Editor*

Editorial

HARDINESS IN PLANTS.

When one passes from south to north, from the tropical through the temperate and to the frigid zone, the change in the type of vegetation is striking. The alteration is very gradual, and with respect to any species of plant there is a broad area of latitude in which its hardiness is affected by local topography. Hence the boundaries of plant zones which botanists have attempted to draw present a different appearance than any lines on the maps.

Even these boundaries are vague and shifting. They should probably be delineated with a broad shading rather than a solid line. Statements hardiness of some plants, largely be-are constantly conflicting as to the cause of different observations under varied conditions.

In recent years scientists have given attention to the vagaries of the weather from season to season and to the characteristics of growth of individual species, in their search for a reason for these conflicting observations. Slow and difficult as has been the research on this subject, there are being revealed certain factors which may make it possible for the grower to produce conditions in a given environment more favorable for hardiness than otherwise would prevail.

This is a fascinating subject, and one which will have more attention as observations make more definite the theories that are being advanced. The paper presented in this issue gives illustrations chiefly of nut trees and fruit trees, but the general thoughts developed will have application to ornamentals as well.

PREPARING THE PROGRAM.

In anticipation of their midwinter annual meetings, the officers of some state associations have already begun preparation of a program, in order to obtain capable speakers and to schedule interesting discussions. Those are the competent officers, those who have learned that only by early preparation and considerable effort can they prepare a program which will not only hold the attention of their members, but increase attendance and the strength of the organization.

The Mirror of the Trade

Their example should be an instructive one to the less experienced officers in other organizations, who are more likely to scurry around at the last minute in order to find something or other to fill in the time allotted for the program. Such delay is likely to result in securing only one or two good speakers, at most, and a scheduling of other persons who are likely to do little more than consume a certain length of time on the program. The members of their organizations cannot be blamed if they either fail to attend or wander out of the meeting hall at such times.

The convention programs of previous years have made it plain that highly paid speakers of national reputation are not essential. Indeed, they are beyond the means of some of the smaller organizations. A few of the latter have made a point to seek for talent within their own ranks, and they have invariably come up with one or two absorbing features by this route. Home talent is frequently overlooked.

Regardless of the sort of material included in the program, an early start is necessary not only for preparation of the program, but for announcement to members in order to bring them to the meeting.

PREDICTS HIGH LEVEL.

Continued high level of employment and domestic spending during most or all of 1948 is predicted by the bureau of agricultural economics of the United States Department of Agriculture.

This bureau was rather highly regarded for its prognostications until, a year ago, it expressed a pessimistic outlook for 1947.

The basis of the anticipated high level of output and employment in 1948 comprises the same basic factors as were responsible for the high record of 1947. The three major factors are continued large outlays for factories and equipment, some increase in new construction and continuing large government expenditures.

The bureau's forecast indicates that farm income may average as high as the record levels of this year.

The bureau admits that a considerable degree of price fluctuation is likely next year and the uncertainty of prices is greater for the second half of 1948 than the first half. Prices later next year will be affected by the size and condition of the 1948

crops both here and abroad. Foreign aid programs will enter into the picture by the extent of the purchases made in this country and the availability of farms to provide for foreign needs.

INFLATION NOT EASY.

As the nation faces what is called the third-round wage rise, many employers think that inflation offers the easiest way out of the country's predicament. They will grant liberal wage increases with one hand and raise prices to their customers as generously with the other. If that were the total of the transaction, perhaps it might be easy, but the results do not end there.

While the wage earners are obtaining a larger income and then paying higher prices for what they buy, there are millions of other citizens whose situation is not so elastic. Business proprietors have not seen their margin of profits doubled while wages have increased by that measure. Those of the public whose income is in part or wholly derived from insurance proceeds, bond interest, dividends and other fixed income payments have been badly squeezed already. Even the social security plan of the federal government, only a decade old, is recommended for overhauling so that the pensioners may receive the fraction of their wages it was intended to pay them at retirement.

Beyond the cost of living, there are also results from inflation that affect our national economy more indirectly. The effect on public savings, on the habit of thrift, on investments of every description, on the tax structure in a variety of political ways—all these spell dislocation, if not confusion.

While inflation may be easy, a stopping point must be reached, and the sooner the better.

THE Ambo Bros. Nursery, Inc., University City, Mo., has been incorporated with \$30,000 capital stock by Virginia Oltz, Phillips Oltz and Edward Ambo.

AFTER twenty-five years in the business, Edwin Sirois is retiring, and his son, Chester Sirois, is carrying on the operations of the Quality Gladiolus Gardens, St. Anne, Ill., which were formerly operated as Edwin Sirois & Son.

Horticultural Council Meets

Attracting a total of sixty-eight persons, by registration record, to its second national horticultural congress, the American Horticultural Council, Inc., offered, at the Hollenden hotel, Cleveland, October 23 and 24, a program of addresses by eminent horticultural scientists and others well worth the minimum annual dues of \$10 in that organization and probably the expense of transportation and attendance as well.

In spite of the elite character of the attendance and the quality of the program, Dr. L. H. McDaniel, head of the department of horticulture at Cornell University, spoke from the floor on the final day to recall that the organization had been formed with a purpose of action, which so far had been unfulfilled.

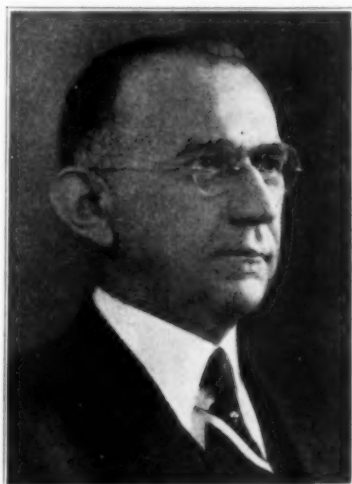
During the evening of the first day seven commissions had met, on research, horticultural awards, testing and reporting, registration and nomenclature, horticultural education, horticulture in industry, and interrelations of horticultural organizations and commissions. The criticism was that these offered the usual recommendations and urgings without leading to definite action.

Two exceptions, this year, were the last-two commissions named. For that on horticulture in industry, James H. Odell reported that a conference had been planned for February, 1948, at New York city, of those men concerned with the planting and maintenance of grounds of industrial corporations; this unrecognized group is larger than generally supposed and its possibilities are making themselves felt.

The commission on organizations offered as an advisory report to the board of directors a new setup in dues. Organizations would be invited to join at an annual fee of \$25 and receive one vote, except that organizations below the state level would be accepted at \$10 without a vote. Individuals would be invited to join at an annual fee of \$10, or \$5 if a member of an affiliated organization. Industrial firms would be subject to solicitation for such offerings as they would give. It was proposed that either a mimeographed or printed bulletin be issued to keep members posted as to the progress of the organization.

Inasmuch as the funds so far collected—amounting to \$8,738.45 since formation of the American Horticultural Council in January, 1945—had been dispersed with the exception of \$453.77, the first need was for funds

to carry out any program. Hope for the future appeared in the offer of the Cleveland Garden Center to provide space and facilities for the council's use. Since the executive assistant at West Grove, Pa., had offered her resignation, the necessity of employing an executive secretary or manager made funds the more necessary, a minimum of \$15,000 being estimated as the budget required for the ensuing year. To date of meeting 220 members had been obtained, who paid upward from the minimum \$10 annually as a founder's membership. It was hoped by their pledging the ob-



Robert Pyle.

taining of additional members to underwrite the required sum.

In the election of directors, eleven were named for another year: Robert Pyle, West Grove, Pa.; E. L. D. Seymour, Hempstead, N. Y.; Dr. Clement G. Bowers, Maine, N. Y.; Dr. R. Milton Carleton, Chicago, Ill.; Dr. J. Franklin Styer, Concordville, Pa.; Dr. Walter Lammerts, La Canada, Cal.; Dr. Warren Mack, State College, Pa.; Dr. H. B. Tukey, East Lansing, Mich.; Arthur G. McKee, Cleveland, O.; Arno H. Nehrling, Boston, Mass., and E. Eugene Pfister, Chicago, Ill.

To replace three women and one man who had withdrawn, the following directors were named: George W. Kelly, Littleton, Colo.; Arnold M. Davis, Cleveland, O.; Mrs. E. F. Rivinus, Philadelphia, Pa.; Mrs. W. H. Champlin, Rochester, N. H.

An executive committee will guide the association until permanent officers are elected.

At the opening session, Robert Pyle, president, expressed again the high hopes for the manifold program of the organization. Arno Nehrling gave a paper listing the horticultural awards, chiefly honorary, made by American organizations today. Methods of obtaining publicity in the press were described by Mrs. Althea Rickert Wheeler, New York. Investigation of the single flower societies was hampered by lack of replies from twenty out of thirty, according to a paper prepared by Dr. R. C. Allen, Harrisburg, Pa., and read in his absence. Garden club activities were described by Mrs. E. F. Rivinus, and state horticultural societies were found to have various aspects, according to a survey reported by George W. Kelly.

At the afternoon session October 23, Dr. Clement G. Bowers introduced three eminent scientists, who offered the addresses which were the highlights of the program. Dr. William J. Robbins, of the New York Botanical Garden, told of the important place of horticulture in the life of the nation. Dr. Albert F. Blakeslee, Northampton, Mass., who instituted the research on chromosomes with colchicine, gave an illustrated talk on the control of evolution and life processes in plants. Dr. P. W. Zimmerman, of Boyce Thompson Institute, Yonkers, N. Y., detailed the research in horticultural applications of plant hormones.

Speakers at the Friday morning session were Dr. R. P. White, executive secretary of the American Association of Nurserymen, on the service given by trade associations; Mrs. Fleeta Brownell Woodroffe, garden editor of *Better Homes and Gardens*, on "What Is the Gardening Industry Doing for the Gardener?" and Rodney H. Brandon, state superintendent of welfare, Chicago, Ill., on horticulture in industry.

An entertaining panel discussion was led by Dr. Kenneth Post, of Cornell University. Members of the panel were Dr. Keith Barrons, of the Dow Chemical Co., Midland, Mich.; Robert Engel, agronomist of the National Fertilizer Association; Dr. R. P. White, and Dr. R. Milton Carleton.

The last-named was the toastmaster at the banquet in the evening, which was followed by two memorable features, one a stimulating address on plant exploration in its relation to modern horticulture, by Dr. Wendell Camp, of the New York Botanical

Garden, and a movie in colors, "Flowers in Action," by John Nash Ott, Jr., Winnetka, Ill. By making individual pictures at intervals of minutes or hours, he is able to show the growth of flowers in rapid action, because pictures are speeded up from 10,000 to 50,000 times in presentation. These remarkable pictures, begun as a hobby, have excited so much attention that their maker has retired from the banking business to devote himself to commercial demands for time-lapse pictures, chiefly in relation to the horticultural industry, and to lend their aid in medical and horticultural research.

Those who remained October 25 took part in a bus trip to local gardens and nurseries, the latter including the Wayside Gardens Co., Mentor, O.; Bosley Nursery Co., Mentor, and Henry Kohankie & Sons, Painesville O.

Persons present allied with the trade, aside from those named above, were Melvin E. Wyant, Mentor, O.; Carl Lumry, Shenandoah, Ia.; W. Ray Hastings, Harrisburg, Pa.; Franklin D. Jones, Ardmore, Pa.; Harvey Bicknell, Cleveland; Robert Roland, Chicago, Ill.; Margaret Herbst, New York; C. E. Scofield, Newark, N. Y., and F. R. Kilner, Chicago.

C. L. WACHTEL.

C. L. Wachtel, operator of the Wachtel Tree Science & Service Co. and the Wachtel Supply Co., Wauwatosa, Wis., was elected second vice-president of the National Arborists Association at its recent convention. President of the midwestern chapter of the National Shade Tree Conference, Mr. Wachtel is also general chairman of the arrangements committee for the National Shade Tree Conference to be held at Milwaukee in 1948.

Actively engaged in tree preservation and planting work for the past twenty-three years, Mr. Wachtel completed a course of arboriculture at the Davey Institute of Tree Surgery, Kent, O. In 1935 he organized the Wachtel Tree Science & Service Co. to expand the knowledge of tree science and service to the tree-owning public. He also organized the Wachtel Supply Co., which manufactures arborists' supplies, such as patented tree climbers' safety saddles and tree food depositors.

He has done considerable work in a supervisory capacity for the Wisconsin highway department in its extensive highway beautification program.

Other activities include membership on the executive committee of the National Arborists Association as well

as on the board of directors of the local Master Landscape Gardeners' Association, of which Mr. Wachtel is past president. He is interested in experimentation to originate equipment and methods which will better accomplish the work of the arborist, since he is convinced that the science of arboriculture will progress only as proper facilities are provided to carry out the ever-expanding possibilities in its field.

NEW OKLAHOMA SECRETARY.

At an executive committee meeting of the Oklahoma Nurserymen's Association, which was held October 15, Richard R. Bloss, Oklahoma



C. L. Wachtel.

City, was elected secretary-treasurer of the association to fill the vacancy caused by the resignation of Max Pfaender, former secretary-treasurer, who has moved his business to Orlando, Fla.

ARIZONA GROUP PLANS EXPANSION.

Although organized but a short time ago, the Salt River Valley Nurserymen's Association, which at present includes only nurseries in the vicinity of Phoenix, Ariz., plans to offer membership to all nurseries and seed stores in Arizona soon.

At the three meetings already held by the group, committees were appointed to draw up bylaws and regulations regarding dues, fees, guarantees and discounts. Places and dates for monthly meetings are to be selected when the group next convenes.

Officers of the new association, all of whom are from Phoenix, are W. H. Norman, Jr., Norman Nursery & Flower Shop, president; Mr. Weaver, Mesa Nursery Co., vice-

president, and DeWitt Wheat, Riverside Nursery, secretary-treasurer.

NEW LOUISIANA GROUPS.

The organization meeting of the Louisiana Florists' and Nurserymen's Association was held at the Hotel Bentley, Alexandria, October 16. Temporary officers are Joe Peters, president, and Mrs. P. A. Shadow, secretary.

The Central Louisiana Florists' and Nurserymen's Association was recently formed at Alexandria, and has as its purpose the building up of the industry in central Louisiana, by promoting interest and accumulating and distributing information.

KANSAS CITY MEETING.

The Greater Kansas City Nurserymen's Association held a meeting October 14 at the nurseries of the Chandler Landscape & Floral Co., Kansas City, Mo. Among the forty persons present was Franklin Rose, of the Kansas state highway department, who spoke on highway beautification, suggesting that nurserymen be active in bidding on work in prospect.

Discussion at the meeting centered on the plans for the Western Nurserymen's Association convention, to be held at Kansas City, Mo., January 6 and 7, 1948.

A barbecue luncheon was prepared and served by C. A. Chandler, head of the Chandler firm, assisted by his daughter.

SEED TRADE SECRETARY.

William Heckendorn, formerly with the National Council of Farm Cooperatives, Washington, D. C., will assume the position of executive secretary of the American Seed Trade Association sometime after December 15. He succeeds Roger J. O'Donnell, who resigned at the time of the association's convention last June. Appointment was announced after a meeting of the executive committee October 10 at Kansas City, attended by twenty-one members. The preceding three months had been spent in investigation and interviewing applicants by J. R. Holbert, president; Merritt Clark, first vice-president, and J. Howard Withey, second vice-president of the association.

THE Hutchinson Nursery, operated by Henry Meyer, is now located at 80 Hutchinson boulevard, Scarsdale, N. Y.

Favorites Among the Dogwoods

By George Graves

Even though most of the dogwoods as they are found growing wild around the world in the northern hemisphere are garden-worthy plants, there are too many of them to warrant growing them all. Many of them closely resemble each other. Even with careful selection of a few species and their horticultural forms, the range is relatively wide both in numbers and aspect. Dogwoods vary in habit from the ground-covering herbaceous *Cornus canadensis* of northern woods through the many shrubby species to the true trees.

One outstanding feature of the dogwoods—so called apparently from no association with dogs—is that the best of them are native American plants. Here is one genus where the product of the local wild landscape has what it takes to stand up in garden competition against something brought home at great risk and expense from back of beyond somewhere on the other side of the world. The one plant of the lot most commonly called dogwood has the rare honor among native plants of being appreciated by Americans, as witness the splendid plantings at Valley Forge and elsewhere in the same part of the country. It is, of course, *Cornus florida*, the so-called flowering dogwood, which grows over most of eastern United States in well drained soil, either sweet or sour, and in full sun or partial shade. Where it is in competition with taller trees, it is usually a plant of the edges of

woods. Where it is not beneath a forest canopy, it seeds freely and grows in thick coppices, each plant being forced to send up a straight, unbranched stem in the struggle to get its foliage up into the light.

Sometimes the nurseryman has taken advantage of such a situation by transplanting these straight-trunked trees into nursery rows at a spacing of four feet or more, and with astonishingly good results. The method is to do the transplanting at about flowering time, or just before, and to cut the pole-like stems to an even height of six feet or so. The result has been a uniform lot of high-branched, symmetrically headed trees in about three years' time.

With good growing conditions, such a program has often worked well. As a rule, however, collecting sizable flowering dogwoods and moving them directly into gardens, especially in spots where the soil is heavy and the drainage poor, has proved questionable practice. Experiences of that kind have probably given rise to the frequently heard report that the flowering dogwood is difficult to transplant. So it is with large specimens not too carefully handled. Quick reestablishment seldom takes place, and stem-boring insects make their prompt appearance in such unthrifty trees. Often associated with such a tragedy is failure to provide the natural organic mulch in which dogwoods revel. Hard-packed soil and lack of sufficient nutrients and water can take their toll even of plants transplanted in nursery sizes with unreduced root systems. As for these smaller trees, which are the kind to plant to get low-branched heads, personal experience in northern New Jersey, where the dogwood abounds in the woods, has been that transplanting bare rooted was successful any time in spring until the unfolding of the leaves, or in autumn after the plants were thoroughly dormant.

When it comes to the several horticultural varieties of *Cornus florida*, there is no question of picking them out of the woods. They must be grown in the nursery from the cutting, the graft or the bud up, and for that reason they are usually planted in nursery sizes and with the usual nursery care. Because less time and trouble in training follow working them on typical *Cornus florida* stocks, grafting or budding is usually prac-

ticed even though softwood cuttings root readily enough. Sometimes the results are surprising. A lot of cuttings of *Cornus florida rubra* was seen at the botanic garden at Edinburgh, Scotland, which were potted after ten days in the sand, and that was in the days before hormone treatments were available.

One variety of the flowering dogwood that seems unrecognized botanically is the occasional selection which differs from the type in having larger than usual bracts around the flowers. These bracts, for which the plant is grown, are the showy associates of the inconspicuous flowers. In dealing with a variant of this kind, it, too, must be propagated vegetatively. Then, there is the form which is normal in appearance until the leaves turn scarlet and the fruits color up in autumn, when this particular one, *C. f. xanthocarpa*, has yellow rather than red fruits.

Perhaps the most deservedly popular form of the flowering dogwood is the pink one. It evidently has appeared over and over again in the woods, and it is likely that not all of the stock in the trade has come from one original parent plant. The pink-flowering dogwood may not be a clone. A pink-flowered wild plant used to bloom regularly at the edge of a wood in central Connecticut. As for intensity of color, the weather may have some influence. In the issue of *Science* for August 15, 1947, Carl D. LaRue, of the University of Michigan, reported that a normally white-flowered dogwood tree had



Cornus Mas.



Cornus Amomum.

pinkish blooms in the dry, sunny spring of 1946.

Other forms of the flowering dogwood are sometimes grown, but are more or less in the freak class. There is *C. f. pendula*, with weeping branches. Like other weeping trees, it is not unpleasing if not permitted to grow in umbrella style, but is trained to have vertical stems from which the downward-reaching lateral branches emerge at intervals. Two other forms of less use in gardens are the one with doubled blooms, *C. f. pluribracteata*, and *C. f. welchi*, with variegated foliage.

The Pacific dogwood, *C. nuttalli*, is known to few Americans other than west coast dwellers. Where it really thrives—as it does not in the east—it can grow to be a larger tree than *C. florida*, but of much the same aspect and wood edge association. A second blooming at the end of summer is reported.

A third tree dogwood is *C. kousa*, from the Orient, and its only slightly technically different variety, *C. k. chinensis*. A personal opinion is that this introduced tree lacks the landscape value of native *C. florida*. However, it does serve to stretch out the season of dogwood bloom. Its pinkish fruits are much different from those of the American dogwoods, being clustered more or less raspberry fashion.

Some well known dogwoods can be seen as either small trees or large shrubs. This is true of the Eurasian cornelian cherry, *C. mas*, although it is usually dealt with as a shrub. Its yellow blooms appear without benefit of showy bracts early in the season before the leaves unfold. These blooms eventuate in bright red fruits, which have had some economic importance in the past. The leaves, once out, hang on late in the season in their summertime green coloration. Like many another long-cultivated plant, the cornelian cherry has numerous garden varieties based on fruit color, size or shape, and on leaf coloration. Varieties with variegated leaves, no longer popular, have sometimes been confused as small plants with forms of *C. alba*. A dwarf form *C. m. nana* has been grown.

For a native dogwood which can appear as either a shrub or a tree there is *C. alternifolia*, so-called because its leaf arrangement does not follow the usual opposite pattern. It is also called the blue cornel, probably because of its bluish, bloomy fruits which are borne on red stems. Full-grown plants have a tiered or stratified branch arrangement, giving it the name of pagoda dogwood.

When it comes to the shrubby dogwoods, not many of them seem to be grown for their flowering properties, except, perhaps, the round-leaved dogwood, *C. rugosa*. The white flowers are followed in September by bluish or greenish fruits. Individual plants grow to six feet or more in height, are of neat appearance and are clothed with exceptionally large rounded leaves, which are of pale color beneath. It is often rated as one of the best of all shrubs for general planting.

Another species which is attractive in flower is *C. racemosa*, the gray dogwood, so-called because of its gray twigs. It is a shrub of four or five feet in height and bears showy white-

stems. Kept pruned, it can be used for red-stem effect. The red osier dogwood is a plant for wet places.

Moist areas, and often shaded ones, seem also the natural sites for the similar or less tall silky dogwood, *C. ammomum*, but it is by no means restricted to them. In fact, it makes satisfactory growth in high, dry and poor soil.

The Bailey cornel, *C. baileyi*, combines a number of significant features, such as red twigs, two-toned leaf coloration above and below and white flowers, followed by white fruits. In cultivation it can be expected to grow about shoulder high.

LEO IHLE.

Leo Ihle, owner of Birchlane Farm and Birchlane Gardens, San Rafael, Cal., was recently elected a director of the California Association of Nurserymen from the Redwood Empire chapter. His firm is also a member of the American Association of Nurserymen.

Born January 8, 1900, at Cobden, Ill., Mr. Ihle is the son of the late Charles A. Ihle, who operated a florists' and nursery business at Murphysboro, Ill., which is now being carried on by a brother, Herman C. Ihle. His grandfather, John Ihle, managed Bell's Greenhouses, at Cobden.

Interest in the family nursery business was not developed, as Mr. Ihle left home at an early age and entered upon a newspaper career. He is still in this field as business manager of the Call-Bulletin, San Francisco.

In 1938 he purchased a 4½-acre tract on Locust avenue, at San Rafael, and in the course of rehabilitating and landscaping the property, developed a hobby into what is now a thriving business. His nursery specializes in the propagation of tuberous-rooted begonias and pelargoniums for the retail nursery trade in the area, and grows these items along with fuchsias and some other plant material for the local customer trade. The wholesale division is operated under the name Birchlane Farm, while Birchlane Gardens incorporate the retail division.

Mr. Ihle was also recently elected director of events for the Marin Art and Garden Center, which sponsors an annual art and garden show, expected to be one of the outstanding outdoor shows of its kind on the west coast in the future.

THE Crampton Nursery Co., Delhi, Cal., has recently been remodeled and modernized.



Leo Ihle.

ish flowers in clusters. The flowers are borne on red stems, which become especially noticeable in autumn after the birds have stripped off the white fruits. The contribution which this and other dogwoods can make toward wild life support is considerable. Experience has shown that this is as satisfactory a shrubby dogwood as any for planting in built-up areas where the air is charged with smoke and soot.

One feature of some of the shrubby dogwoods is the winter effect of stems colored either red or yellow. In nurseries, one of the most suitable red-stemmed varieties is *C. alba sibirica*, which is of moderate growth and bright coral-red on the young wood. As with other species, the color effect is greatest if the plants are pruned hard every few seasons to force the presence of many young branches. For a yellow-stemmed variety, there is *C. stolonifera flaviramea*. The latter is a variety of the coarse red osier dogwood, which spreads over wide areas by prostrate

Fruit Tree Budding and Grafting

By R. L. Winklepleck

In discussing propagation methods I believe it is desirable to start from the beginning and review the reasons behind such practices and the basic principles involved. Budding and grafting of fruit trees are practiced primarily in order to produce a tree of a desired variety on a root system which offers certain advantages of growth characteristics or resistance to insects, diseases or cold. Sometimes they are done to produce a tree consisting of several varieties or kinds of fruit, and there are, of course, many related reasons for budding and grafting. They are the foundation on which our present fruit industry is built, and I believe that discussion should include something about the various rootstocks which are used for our fruit trees.

Apple and Pear Stocks.

Because I believe that only through the use of dwarfing can the average home gardener achieve success in tree fruit production, dwarfing stocks are particularly important. The home gardener provides a large market, and I am quite sure that commercial growers will someday use at least semidwarf trees; there are a few such commercial orchards today. There is much work in progress on improved apple stocks. The material commonly used today is so variable and has so many objectionable characteristics that improvement is highly desirable. Two stocks which look quite promising for the commercial orchardist are Hibernial and Virginia crab. These two materials must be propagated vegetatively at present, and their cost is rather high, but if this cost can be reduced, these two stocks will undoubtedly be used extensively, because of their disease resistance, vigor and growth characteristics.

In discussing dwarf apple stocks, it is necessary to consider Malling selections. These are selections which were originally made at the East Malling experiment station, East Malling, Kent, England, and while they are only selections of existing stocks, rather than new materials, they have provided a method of classification. The sixteen Malling

selections include stocks of widely varying characteristics. Some produce nearly normal-size trees; some are extremely dwarfing. Types of root systems and many other characteristics vary, and we can therefore find in these sixteen selections stocks suitable for many desired conditions.

Malling IX produces the greatest dwarfing effect, and it is entirely possible to have a tree fully grown on Malling IX which is no higher than a man. These trees come into bearing much earlier than the same varieties on normal stocks, and fruit can be expected the second year after planting. Because of the smaller size of the trees, total fruit production is, of course, much less than normal, although one to one and one-half bushels are sometimes produced on a 6-foot tree. Of course, fruit size and fruit characteristics are identical for the variety produced on standard stocks. The Malling IX stock has a shallow, brittle and poorly developed root system. The graft union is frequently not too strong, and staking of such trees is required. Fruit trees on Malling IX, however, do have a definite place for the home gardener, since they can be used in locations where normal trees could not even be considered. Insect and disease control is much simplified by their smaller size, and this is, to my mind, the primary advantage of dwarf trees for the home gardener.

A slightly larger tree with a better root system, but one which usually requires staking, can be produced on Malling VII stock. A stock which should be much liked by nurserymen generally is Malling V. It produces a dwarf tree which may go up to eight feet, or even ten feet, but is seldom larger, and can be kept smaller by proper pruning. A tree on Malling V does not come into bearing until the third and sometimes fourth year after planting, but the root system is much better. It should not normally require support, and it is a good nursery plant; that is, it is easy to propagate. A high percentage of buds take, and it is generally easy to handle. It must be understood, of course, that Malling stocks must be propagated vegetatively. Stooling is the most common method, and layering is also practiced. Only occasionally are stem or root cuttings used. The demand for these dwarf trees should be good,

and they can be top-worked to a wide selection of varieties.

Probably the best pear stock for commercial use is Old Home, because of its fire blight resistance. However, it produces a standard-size tree. The only common stock for dwarfing pears is Angiers quince, which while quite susceptible to fire blight, produces a good dwarf tree.

Stocks for Stone Fruits.

Mahaleb is commonly used as a cherry rootstock, and it has a slightly dwarfing effect. Mahaleb, however, has a poor root system. It lacks affinity with many of the varieties worked on it, and surely something better will be found. *Prunus avium*, the Mazzard or wild sweet cherry, is a good rootstock. It has an excellent root system, produces good unions with both sweet and sour cherries and a healthy, full-size tree. Because of its susceptibility to leaf spot, however, it is not too frequently used. There is no really good dwarf stock for the cherry, although *P. besseyi*, the western sand cherry, can be used to dwarf the sour cherry, as well as peaches and plums.

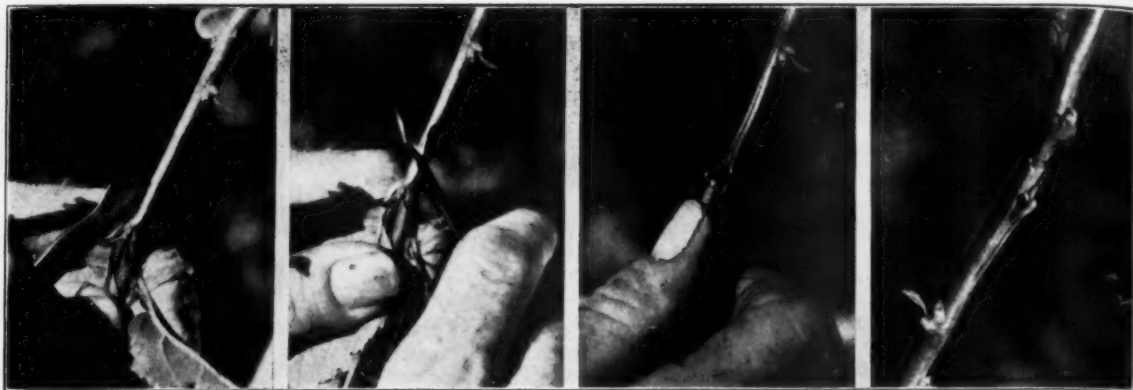
The Myrobalan plum, commonly used as a plum stock, lacks uniformity, but this is a rather common complaint. Better plum stocks will probably be developed someday. The Marianna plum will produce a slightly dwarfed tree, and satisfactory results can be secured with stocks of *P. americana*, the common wild goose plum, which has a slight dwarfing effect.

Southern Naturals are the best of the commonly used peach stocks, but where nematode resistance is important, seedlings of Shalil and Yunnan, Oriental importations, show high promise. Here again, *P. americana*, mentioned in connection with plums, will produce a dwarf tree, as will *P. besseyi*. I question very much, however, the advantage of dwarf stocks for peaches, since proper pruning can keep them to almost any size, and by selecting varieties which produce small trees the same effect can be secured.

Budding and Grafting.

Considering the mechanics of budding and grafting, we must keep in mind that in uniting two pieces of wood, either in the budding or grafting operation, new cells are formed only in the cambium layer, and only

Prepared by R. L. Winklepleck, horticultural agent of the Baltimore & Ohio Railroad Co., Baltimore, Md., from illustrated talk presented by him before the annual meeting of the Maryland Nurserymen's Association.



Preparing the Stock by Making T-shaped Cut and Inserting the Bud.

if the cambium layers of the two pieces of wood are in contact or very close proximity can we expect union to take place. For practical purposes, we shall consider the cambium as the layer several cells thick which marks the separation point between the bark and the wood. Thus, we should remember that the first rule of successful budding and grafting is to place the cambium layers of the stock and the scion in contact with each other. Of equal importance is the necessity of covering the union with a material which will not only maintain this contact between cambiums, but also will exclude air which would dry and kill the exposed tissues. Other major points to remember include the necessity of always using fresh plant materials and the importance of sharp tools which make clean cuts and do not tear or otherwise mutilate the tissues.

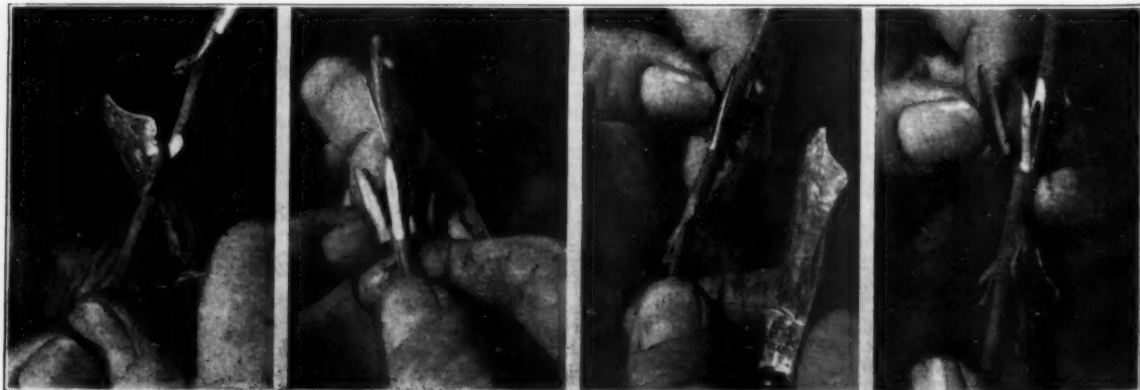
There are, of course, many methods of budding and grafting. Some have been superseded by improved methods; others are adapted to specific plant materials or particular conditions. For working fruit trees I believe the bark bud is probably the most generally satisfactory. A T-

shape cut, as illustrated, is made on the stock with the flaps loosened or laid back, as is commonly done for several kinds of budding. The bud is prepared by making a cut beginning below the bud and extending upward to a point past the bud, much as is done in cutting either a wood bud or a shield bud. However, the horizontal cut made above the bud extends only through the bark. Then, by grasping the bud with the thumb and forefinger and pinching it gently, the bud and its attached bark will separate at the cambium from the wood, and the entire underside of the bud will be covered with cambium or near-cambium cells. The main advantage of the bark bud is the fact that, as its name indicates, it consists only of bark, with no attached wood. When this bud is slid under the flaps cut in the stock, the cambium cells on the bud piece contact the broad, exposed area of cambium cells on the stock. The chances for union, therefore, are many times greater than when only a narrow ring of cambium cells around the edge of the bud piece can make contact. By simply removing the wood from the bud piece, a

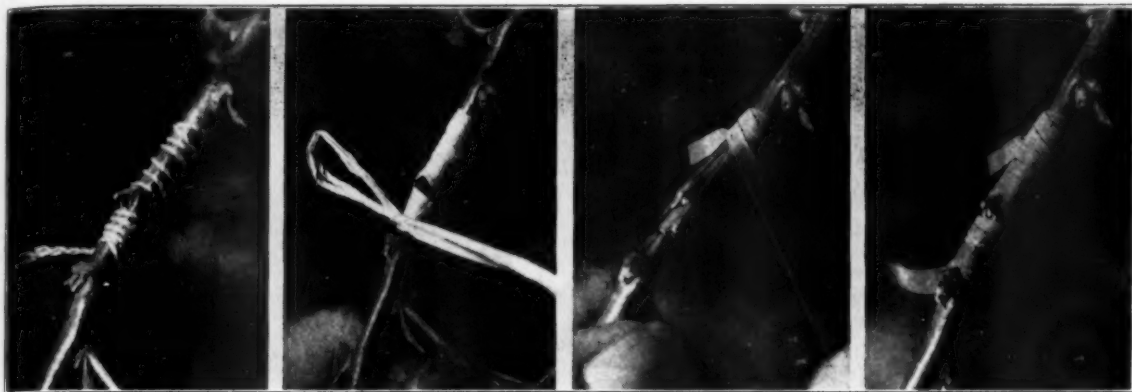
much greater area of cambium is exposed, with a proportionate increase in the chances for a satisfactory union.

Tying may be done with soft cotton cord, raffia or especially prepared rubber bands which come in various lengths, widths and thicknesses. Remember the importance of keeping the stock and scion in close contact and simultaneously excluding air. I greatly favor the use of rubber bands, which efficiently exclude air, maintain a firm but gentle contact and have the added advantage of being both quick and easy to apply. These rubber bands are especially treated so they will disintegrate after a few weeks.

Budding is performed during the growing season after the current season's buds are mature, which means, in this area, from mid-July until the bark will no longer slip in the fall. If budwood is cut during the preceding winter and stored in moist sand or moss in cool storage to keep the buds dormant, budding can be started in the spring as soon as new growth starts and the bark will slip. Frequently, the inserted bud is allowed to unite and remain inactive



Steps in Cutting and Pinching Off the Bark Bud.



Bud Tied with Soft Cotton Cord, with Raffia and, at Start and Completion, with Rubber Band.

during the rest of the summer, and the following winter or spring the stock above the bud is cut off and new growth beginning from the bud develops into the new tree. However, in this area, and particularly farther south, when dormant buds are used in early spring, it is possible partially to break over the stock above the bud a few weeks after budding, thus forcing the newly inserted bud into growth and producing a salable tree in a shorter period of time.

Grafting is normally performed in late winter or early spring, just before or immediately after growth starts. Of the many types, I should like to discuss two which fit most of the conditions encountered. The first, used when stock and scion materials are of the same or nearly the same size, is the whip graft, sometimes called the whip and tongue graft. In this type of union, a long slanting cut is made on both the stock and scion. These cuts should be such that when the two surfaces are placed together, perfect contact the entire length of the cut results.

One of the earliest methods of grafting stopped right here, but such

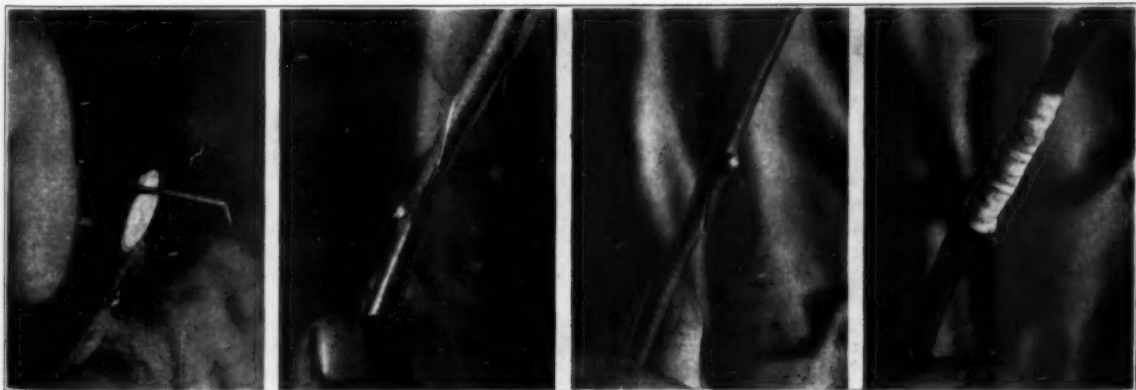
a union lacks strength. To complete the whip graft, make longitudinal cuts on both stock and scion starting about one-fourth of the distance from the tip of the slanting surface and extending about one-half inch lengthwise of the stem. This cut should incline slightly toward the center of the stem to reduce splitting. The tongues thus prepared on the stock and scion are then inserted into the cuts made on the opposite pieces and the two forced together until the cambium layers are in contact. Thus, we have not only increased the structural strength of the union, but have also increased the area of cambium in contact. If the stock and scion pieces are not identical in diameter, the cambium on one side only can be matched, and this is normally enough for a good union.

Cord, cloth strips or raffia can be used to tie this graft, followed by an application of grafting wax to exclude air. An especially prepared adhesive tape is, however, available which does a thorough job of excluding air without the use of wax, affords adequate support and disintegrates before causing constriction of the union.

Whenever the graft is to be made on an exceptionally large stock, such as when a tree is severely cut back for top-working, the cleft graft can be used to advantage. This cleft is prepared by cutting the stock off squarely and smoothly and then making a vertical cut down the middle of the stock for two or three inches with a heavy knife or grafting chisel. This cleft is then wedged open, preparatory to insertion of the scions. The scion material, which can be as small as one-fourth inch in diameter, is then cut in the shape of a long tapering wedge, one edge of which is slightly thicker than the other. Two such scions are then inserted in the cleft, with the bark and cambium on the thicker sides of the wedges in each instance matching the inner bark and cambium layer of the stock. When the wedge is removed, the stock tightens on the inserted scions, holding them tightly in place.

Common practice is to paint all the exposed tissues with grafting wax to exclude air, but there is reason to think that if the graft is first wrapped with grafting tape or cloth strips and then the wax applied, a

[Concluded on page 53.]



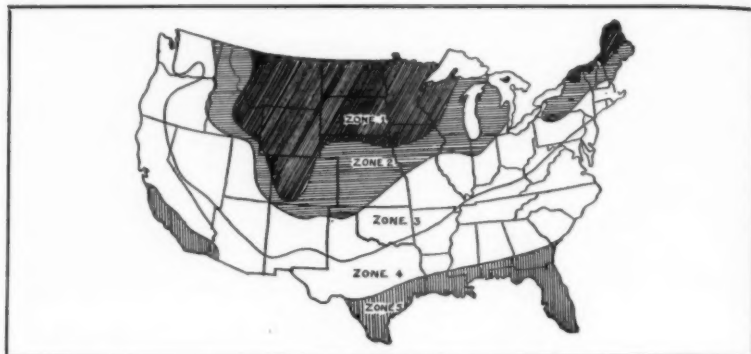
Steps in Making Whip and Tongue Graft, Finally Wrapped in Especially Prepared Adhesive Tape.

Prize Designs of Small Home Grounds

Classic proportions and unity receive particular attention in the landscape design for a colonial style house in zone 3, which appears on the opposite page. James A. Maschmeyer and Marvin J. Bareither, Indianapolis, Ind., received an honorary mention for this entry in the competition for designs of small home grounds sponsored by the American Nurseryman with the cooperation of the National Landscape Nurserymen's Association.

The comments of Mr. Maschmeyer and Mr. Bareither on their design appear below.

The two beech trees placed at either side of the almost symmetrical front lawn make an imposing frame for the dignified colonial architecture and foundation planting. And the yew hedge to the fore of the foundation planting makes a small inner frame for the house itself.



Planting Zones Observed in Competition for Designs of Small Home Grounds.

At the rear of the house a privet hedge serves both as a picturesque framework and background for the garden. Orderly progression from one garden area to another conforms to the restrained atmosphere of the

formal picture made by the lawn and flower beds and as a practical framework to separate the vegetable garden and service areas from the rather colonial style of architecture.

All the landscaped areas have been

COLONIAL HOUSE, ZONE 3.

The colonial style of architecture is one of the most delightful of all in American architecture, for it reflects a way of life and a refined taste of a pioneer people.

Most of the early colonial architecture originated in Virginia, Georgia and the Carolinas at a time when entertaining, gay parties and generally high social life were a prominent part of living. The gardens were usually closely related to the house and became an important part of the entertaining. Since there were many gorgeous perennials and flowering shrubs native to this region, flower gardens became highly developed. They were generally formal in character and were related to the house by being placed on axis with an important door, window or terrace, making a pleasant vista. In this manner a party crowd could enjoy the gardens from the house or it could pass easily from one to the other, thus gaining a moving experience of both.

The colonial people were conscious of classic proportions, and their spacious rooms, walls and decorations reflected their taste as did the areas of open space which surrounded their houses. The lawns and gardens were also spacious and well in keeping with the classic proportions of the architecture. The lawns, which were planted with a few well chosen trees, were simple, but their size gave the house an imposing setting.

In this particular design every effort has been made to carry out this sense of classic proportion in the gardens. The lawn is of a single panel and is located so that it is easily viewed from and conveniently accessible to the porch. The vista is terminated by a rose pergola, which is also of classic design. Although the gardens are divided into three parts, the terrace garden, the perennial garden and the vegetable garden, the effect of the lawn panel combines the perennial with the terrace garden. The vegetable garden is necessarily separated.

By JAMES A. MASCHMEYER and MARVIN J. BAREITHER, INDIANAPOLIS, IND.

The terrace garden occupies a prominent place in the design. Being close to the house, it must be colorful and interesting most of the year. In the spring there are tulips with a background of peonies. At the ends of the beds and in front of the tree peonies, a large clump of dark blue Siberian irises adds a nice texture accent. The screen of French lilacs on the west side provides additional color and fragrance. In the summer, when the tulips and peonies are dying down, portulacas and chrysanthemums can be planted to carry on the interest through the rest of the summer and autumn.

The garden by the pergola is a perennial garden. The flowers are to be selected by the owner, but will include phloxes, delphinium, lilies, Shasta daisies, hardy asters and other flowers whose blooming period extends from summer to autumn.

The vegetable garden is ample for salad crops, such as lettuce, radishes, cabbages, onions and some berries. Later on, when the family tires of the vegetable garden, it can be converted into a picnic terrace with an outdoor oven and grill. The tulip tree can be a large tree when it is planted, so that the shade may be enjoyed from the first.

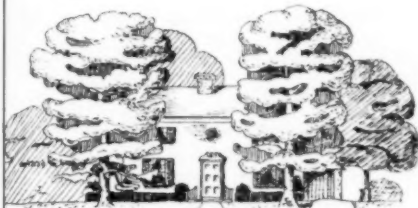
The foundation planting is simple, so that it will not detract from the house. The four upright yews are used as accent plants, while the yew hedge is an attempt to give the house an appearance of having a wider lot than it really has. The house needs some horizontal planting lines to tie it onto its site, and the hedge also seems to accomplish this. The ground cover of English ivy behind the hedge will cut down maintenance there.

The chief merits of the plan are its simplicity, its directness of function, its low initial cost and its continuity of style.

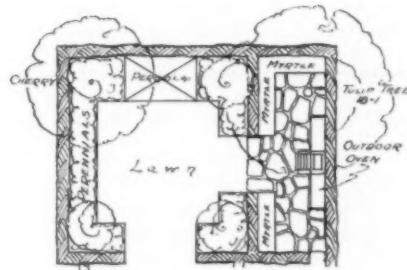
James A. Maschmeyer and
Marvin J. Bareither.

COLONIAL HOME

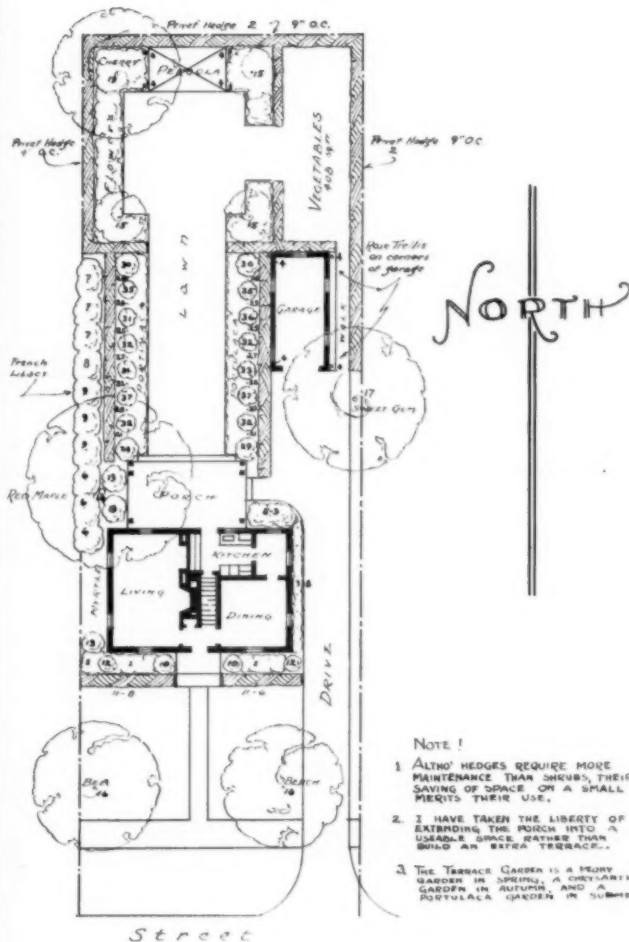
SCALE  ZONE N° 3



FRONT ELEVATION



VEGETABLE GARDEN REVERSION



GENERAL PLAN

NOTE !

1. ALTHO' HEDGES REQUIRE MORE MAINTENANCE THAN SHRUBS, THEIR SAVING OF SPACE ON A SMALL LOT MERITS THEIR USE.
2. I HAVE TAKEN THE LIBERTY OF EXTENDING THE PORCH INTO A USEABLE SPACE RATHER THAN BUILD AN EXTRA TERRACE.
3. THE TERRACE GARDEN IS A PEACH GARDEN IN SPRING, A CHERRY/ALMOND GARDEN IN AUTUMN, AND A PORTULACA GARDEN IN SUMMER.

KEY	PLANT NAME	QUANTITY
1	HEDERA HELIX ENGLISH IVY	80'x10'
2	LIGUSTRUM IBOLEUM IBOLEUM PRIVET	400
3	RIBES ALPINUM MOUNTAIN CURRANT	8
4	ROSA CLIMBER PAUL'S SCARLET CLIMBER	8
5	SPIRAEA FROEBELI FROEBEL'S SPIREA	3
6	SYRINGA HYBRIDUM CHARLES JOLY	3
7	SYRINGA HYBRIDUM KATHARINE HAVEMEYER	3
8	SYRINGA HYBRIDUM M. CASIMIR-PERIER	1
9	SYRINGA HYBRIDUM PRESIDENT LINCOLN	3
10	TAXUS BROWNI BROWN'S YEW	2
11	TAXUS CUSPIDATA SPREADING YEW	14
12	TAXUS CAPITATA UPRIGHT YEW	2
13	VIBURNUM BURKWOODI BURKWOOD'S VIBURNUM	3
14	ACER RUBRUM RED MAPLE	1
15	CORNUS FLORIDUS RUBRUM PINK FL. DOGWOOD	3
16	FAGUS AMERICANA SILVER BEECH	2
17	LIQUIDAMBER STYRACIFLUA SWEET GUM	1
18	LIRIODENDRON TULIPIFERA TULIP TREE	1
19	PRUNUS VARIETY MONTMORENCY CHERRY	1
20	VINCA MINOR	100'x10'
21	CHRYSANTHEMUM CRIMSON BEAUTY	2
22	" CYDONIA	2
23	" GRANNY SCROVILL	1
24	" LAVENDER LADY	1
25	" MRS. PIERRE-DUPONT	2
26	" SEPTEMBER CLOUD	2
27	" SYMPHONY	2
28	" SANTA-CLAUDE	2
29	PAEONIA TREE-CHERRY-BLOSSEM	2
30	PAEONIA TREE-MOON-BEAM	2
31	PAEONIA-EDULIS SUPURBA	1
32	" FELIX-CROUSSE	2
33	" FESTIVA-MAXIMA	1
34	" LE CYGNE	1
35	" LONGFELLOW	2
36	" MONS. JULES-ELEI	1
37	" SARAH-BERNHART	2

designed to utilize the limited space available and at the same time preserve the spaciousness of the colonial style. Some thirty-seven varieties of trees, shrubs and flowers have been selected to carry out the theme in such a way as to provide both beauty and privacy for the occupants of the house.

A scheme of a far different nature, a design for a modern style house in zone 2, also earned an honorary mention for its designer, Jan B. Van-

derploeg, North Muskegon, Mich.

The contest rules required that an area for lawn games, such as badminton, croquet, shuffle board, etc., be provided for the family's 15-year-old daughter, and so the designer utilized all of the rear yard for this recreational area, indicating only a few well placed shade trees and a tall hemlock hedge as the landscape planting for this part of the yard. The vegetable garden, the other requirement in the rules, is practicably placed

at the kitchen side of the house between the picnic and service areas.

The flower garden at the opposite side of the house presents a beautiful view from the bedroom windows and also forms an outdoor living room, as its entrance is directly from the living-room porch. So placed, the flower garden further serves to screen the recreational area from the house.

Mr. Vanderploeg's design is reproduced on the opposite page and his comments appear below.

MODERN STYLE HOUSE, ZONE 2.

By JAN. B. VANDERPLOEG, NORTH MUSKEGON, MICH.

The modern style house, simple, direct and functional, is a study in straight lines. The planting about the house is in the same spirit; the lines are softer, but like the house they are simple, direct and straight.

Along the street are two large spreading American elms, which serve to introduce the occupants of the house to passers-by. They are aided by the purple plum and the flowering dogwood, which with their interesting branching, colored leaves, beautiful flowers and handsome fruits, stand on either side of the building. Also complementing the elms in this outdoor room with its flagstone walk, whose edges fade into the surrounding carpet of rich green turf, are straight rows of spreading yews, dressed the year around in rich blue-green foliage. Together, the house and its front planting present an ensemble which provides a pleasant introduction.

The lot is divided into four areas, the front yard, which has just been described; the flower garden, the recreation area and the service area, which includes the laundry yard and vegetable garden. Each area is defined by a surrounding hedge.

The house is placed so that the porches, upon which persons will relax and entertain, face the south and the rear area, giving opportunity for the full enjoyment of sunshine and the desired privacy. The porch from the living room overlooks a garden, with a central panel

of flagstone which may be used as a corridor to the recreation area or as a spot upon which to place a chair or table. The garden can be colorful with a variety of flowers, annual or perennial, from early spring when the narcissi are in bloom until late fall when the chrysanthemums greet the first snowflakes. The garden is flanked on two sides with a clipped Amur privet hedge, which gives the area the desired privacy. The straight lines of the privets are broken by the Scheidecker crab apple, which throws an interesting shadow into the area. Beside being viewed from the porch the garden can be seen from the well windowed living room and the hallway which connects the bedrooms.

The recreation area, open to much sunshine, is enclosed by a clipped hemlock hedge, growing to a height of eight to ten feet. It is shaded by two pin oaks and the colorful Schwedler maple. Facilities for picnicking and playing games, such as horseshoe, shuffleboard, croquet and badminton, are provided for.

The service area to the east of the house, with its enclosing hedge of Amur River North privet, completes the picture. The laundry yard and vegetable garden are both within easy reach of the utility room and kitchen.

The entire landscape scheme is based on directness and simplicity and is planned for persons who believe that function should determine form.

Jan B. Vanderploeg.

DOUGLAS FIR SURVIVES.

An unusual instance of the survival of a Douglas fir has been reported by Roy M. Nordine, propagator at the Morton Arboretum, Lisle, Ill. When a local businessmen's association purchased the tree last December for an outdoor Christmas party, it was intended that it be planted later in another location. However, this was never done, and the tree, which measures about fifteen feet in height and came with a 3 1/2-foot ball, has remained on the same spot since delivery. In the spring it sent out new growth of from one to two inches.

During the summer rainfall was below normal, and the months of August and October were notably dry and hot. The ball has fallen away on one side, affording even less protection and leaving many small roots

without any soil. But the tree is still in good condition and worthy of planting if cared for properly.

DEDICATE TREE FARM.

Dedication ceremonies marking the first tree farm in Pennsylvania were held October 29 at the Glatco plot of 600 acres, three miles southwest of Fairfield, in Adams county, to open a state-wide program of reforestation sponsored by the department of forests and waters and the Pennsylvania Forestry Association.

The 600-acre plot is privately owned by the Glatfelter Pulp Wood Co., Spring Grove.

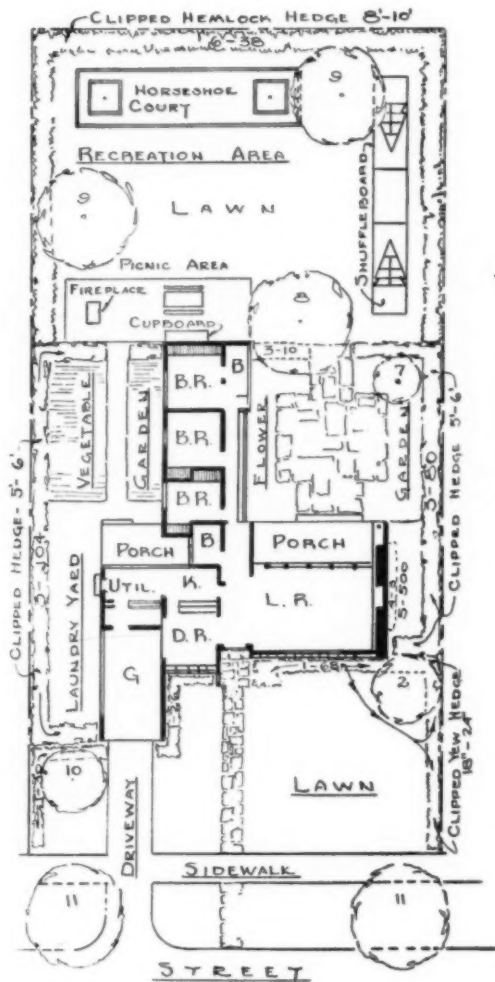
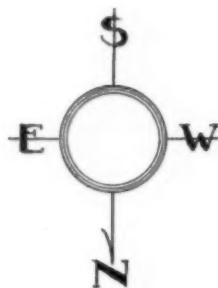
The tree farm program is designed to encourage better woodland management by private forest owners, basing the activity on the idea that timber is a crop and can be grown

and harvested regularly, like any other crop produced by the farmer. Tree farms have been established in several other states.

Several farmers and other landowners in Adams, Franklin and York counties who have had their woodlands classified as tree farms, along with the paper company, received certificates showing their voluntary cooperation in the program.

THE landscape planting for the Chicago Tribune prize home recently built at Kankakee, Ill., for display was done by the Kankakee Nursery Co., Kankakee.

FLOWERLAND, Weslaco, Tex., has been incorporated with \$60,000 authorized capital stock by H. L. Trott, Margaret R. Trott and Clark Oglevee.



PLANT KEY

KEY QUAN	BOTANICAL NAME	COMMON NAME
1 124	TAXUS CUSPIDATA	SPREADING YEW
2 1	CORNUS FLORIDA	FLOWERING DOGWOOD
3 200	LIGUSTRUM AMURENSE	AMUR PRIVET
4 3	AMPELOPSIS TRICUSPIDATA	JAPANESE CREEPER
5 500	PACHYSANDRA TERMINALIS	JAP. PACHYSANDRA
6 38	TSUGA CANADENSIS	CANADA HEMLOCK
7 1	MALUS SCHEIDECKERI	SCHEIDECKER CRAB
8 1	ACER PLAT. SCHWEDLERI	SCHWEDLER MAPLE
9 2	QUERCUS PALUSTRIS	PIN OAK
10 1	PRUNUS CERAS. PISSARDI	PURPLELEAF PLUM
11 2	ULMUS AMERICANA	AMERICAN ELM

SCALE



ZONE 2

Hardiness of Woody Plants

By H. L. Crane

There is hardly any soil or climatic condition found in the world where it is not possible for at least one or more kinds of plants to be grown. This is possible because the plants that can be grown under the most adverse conditions have special structures and adaptations with regard to periods of growth and rest or dormancy. One of the most important adaptations of nearly all trees and shrubs that shed their leaves in autumn and survive freezing weather without injury for a part of the year is that of rest. This rest in plants is somewhat similar to sleep in animals in that it is a period in which the activity of the life processes take place slowly. In other words, the plant physiologist defines rest in living plants as that period in which their buds will not open and grow even though the temperature, moisture and other external environmental conditions are highly suitable for growth.

Different kinds of deciduous plants have or require rest periods of different lengths, just as some people require more sleep than do others. Two or three weeks may be enough for almonds, but three or four months may be required for butternuts, to cite extremes. The eastern black walnut requires more rest than most Persian walnut clones, and they require more than the southern California black walnut. Even within a species there is considerable difference in the rest period of individual seedling trees and certain clones. For example, it has been found that the varieties of Persian walnut grown in northern California and in Oregon, such as Franquette and Mayette, have the longest rest period, and those grown in southern California, such as Placentia, Ehrhardt, Chase and others, have the shortest rest period. It is quite possible that the clones and seedlings of the Persian walnut brought to this country a few years ago by the Rev. Paul C. Crath from the Carpathian mountains of Poland may require the longest rest period of all.

Paper entitled "Factors Influencing the Hardiness of Woody Plants," presented at the annual meeting of the Northern Nut Growers' Association, at Guelph, Ontario, Canada, by H. L. Crane, principal horticulturist, division of fruit and vegetable crops and diseases, bureau of plant industry, United States Department of Agriculture, Beltsville, Md.

The question may be asked, what causes or brings on this rest period in plants and what breaks it? The scientific answers to these questions are not known at this time, but we do know some of the factors which cause the initiation of rest and how it is broken.

Tree growth is initiated in the spring with coming of warm weather and other suitable conditions. At first the rate of growth is slow, but the rate increases and goes through a maximum and then slows up again and finally ceases. On the cessation of growth in length, a terminal bud is formed and the tree begins to go into rest. This period of growth is determined by the age of the trees, the suitability of moisture and nutrient supply. Young trees grow longer during the spring and summer than do old ones. Deficiencies of soil moisture or nutrients or both cause the cessation of growth and the beginning of rest. In some trees, such as tung, cessation of growth and the initiation of rest are caused by the change from long to short day lengths.

After rest has begun, the longer it continues the more profound or deeper it becomes until a maximum is reached—i.e., it becomes increasingly difficult, up to a certain time, to make the trees start growth again even though optimum conditions are provided. Some trees, such as Persian walnuts and pecans, for example, are slow to go into deep or profound rest in late summer or fall. For this reason, there may be several cycles or periods of growth during the summer and early fall, depending on weather conditions and whether the leaves on the trees have remained in a healthy condition. Under conditions of dry weather, growth stops on the Persian walnut and pecan, and when this is followed by a rainy period and warm weather, growth begins again. In fact, in early summer a walnut or pecan tree may form terminal buds on all the shoots and remain without growth long enough for an apple or pear tree to go into complete or profound rest; then later, new shoot growth may be made from all or nearly all of the walnut or pecan shoots. Not only is this an important factor in promoting susceptibility to cold injury, but in the case of bearing trees more often than not this late growth prevents the proper development of the kernels in the nuts and they are poorly filled or shriveled at harvest.

Should the leaves of these trees in midsummer or later be so seriously damaged by disease or insects as to result in partial or complete defoliation, new growth is generally sure to follow even in late fall if growing conditions are suitable. This habit permits such trees to grow so late that there is much greater danger of severe injury from late fall or early winter freezes than is the case with most other deciduous fruit trees. Furthermore, it explains why we see so much cold injury to the shoots and limbs of trees; they had grown late and had no chance to develop hardiness before killing temperatures occurred.

After the rest in trees has become deep or profound a certain amount of chilling temperature must prevail before the rest period is broken so as to permit the buds to open and grow normally on the approach of warm weather. This is often spoken of as the chilling requirement. If the rest period is not broken by a suitable amount of chilling, tree growth is slow to start in the spring, and then only certain of the longer and stronger twigs may force into growth; water sprouts may develop on the trunks and main limbs; flower buds may not open, but fall off, and even though the trees may flower, the flowering period is long and few or no fruits or nuts may be set. The most effective chilling temperature is not known, but we can be reasonably certain that temperatures of 45 to 32 degrees Fahrenheit are just as effective in breaking the winter rest period as are those well below freezing.

This chilling requirement is essentially the same as the rest period. Almonds have a short rest period and require two to three weeks of chilling, while butternuts, with a long rest period, may require three or four months. When the tree has been subjected to adequate chilling the rest period is broken, and with the oncoming of warm weather growth, blossoming and fruit setting are normal.

A distinction of great importance from a physiological and a practical point of view is made between rest and dormancy in plants. This difference can be simply stated; plants, trees or seeds that will not grow when external environmental conditions are favorable for growth are in rest, but after the rest period has been broken and they do not grow because of

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YEARLING PEACH TREES

	Each	Per 10	Per 100
1-in. and up, heavily branched.....	\$1.10	\$9.50	\$85.00
7/8 to 1-in., 6 to 7 ft.....	.95	8.00	70.00
11/16 to 7/8-in., 5 to 6 ft.....	.85	7.00	60.00
9/16 to 11/16-in., 4 to 5 ft.....	.75	6.00	50.00
7/16 to 9/16-in., 3 to 4 ft.....	.65	5.00	40.00
5/16 to 7/16-in., 2 to 3 ft.....	.50	3.50	25.00
1/4 to 5/16-in., 2 to 3 ft.....	.40	3.00	20.00
Belle of Georgia Golden Jubilee		Rochester	
Brackett Greensboro		Shipper's Late	
Carman Halehaven		Sunhigh	
Crawford's Early Heath Cling		Summercrest	
Crawford's Late J. H. Hale		Triogram	
Early Elberta O'Boy		Valiant	
Elberta Red Bird Cling		Vedette	
Gage Elberta Redhaven		White Hale	
Goldencrest			

APPLE TREES

2-year Buds

	Each	Per 10	Per 100
1-in. and up, heavily branched.....	\$1.10	\$9.50	\$85.00
7/8-inch and up, 6 to 7 ft.....	.95	8.00	70.00
11/16 to 7/8-in., 5 to 6 ft.....	.80	6.50	55.00
9/16 to 11/16-in., 4 to 5 ft.....	.70	5.50	45.00
7/16 to 9/16-in., 3 to 4 ft.....	.60	4.50	35.00
5/16 to 7/16-in., 2 to 3 ft.....	.50	3.50	25.00
Anoka Jonathan		R. I. Greening	
Baldwin Jonathan, Dbl. Red		Stayman	
Delicious Lodi		Stayman, Dbl. Red	
Delicious, Dbl. Red McIntosh		Williams Early Red	
Gravenstein, Red McIntosh, Dbl. Red		Yellow Delicious	
Grimes Golden Red Spy		Yellow Transparent	
Hyslop Crab Rome Beauty		York Imperial	

PEAR TREES

2-year Buds

	Each	Per 10	Per 100
11/16-in. and up, 5 to 6 ft.....	\$1.20	\$10.50	\$90.00
9/16 to 11/16-in., 4 to 5 ft.....	1.05	9.00	75.00
7/16 to 9/16-in., 3 to 4 ft.....	.90	7.50	60.00
Bartlett Duchess			
Cayuga Kieffer			
Clapp Favorite Seckel			

PLUM TREES

	Each	Per 10	Per 100
11/16-in. and up, 5 to 6 ft.....	\$1.30	\$11.50	\$100.00
9/16 to 11/16-in., 4 to 5 ft.....	1.05	9.00	75.00
7/16 to 9/16-in., 3 to 4 ft.....	.90	7.50	60.00
5/16 to 7/16-in., 2 to 3 ft.....	.80	6.50	50.00
Abundance Stanley			
Burbank Shropshire Damson			
Fellenberg Red June			

SOUR CHERRY

	Each	Per 10	Per 100
9/16 to 11/16-in.....	\$1.25	\$11.00	\$95.00
7/16 to 9/16-in.....	1.10	9.50	80.00
5/16 to 7/16-in.....	.95	8.00	65.00
Montmorency Early Richmond			
May Duke English Morello			

SWEET CHERRY

	Each	Per 10	Per 100
9/16 to 11/16-in., 4 to 5 ft.....	\$1.25	\$11.00	\$100.00
7/16 to 9/16-in., 3 to 4 ft.....	1.10	9.50	85.00
5/16 to 7/16-in., 2 to 3 ft.....	1.00	8.50	70.00
Black Tartarian Napoleon			
Governor Wood Schmidt's Big.			
Lambert Yellow Spanish			

GRAPEVINES

Our Grapes have heavy fibrous root systems, with many lengthy canes at the top. Write for prices on large numbers.

	Each	Per 10	Per 100
CONCORD (blue), CATAWBA (white):			
(mahogany), NIAGARA (white):			
2-yr., No. 1 grade.....	\$0.25	\$1.75	\$12.00
1-yr., No. 1 grade.....	.20	1.50	9.00
AGAWAM (red), FREDONIA (black),			
MOORE'S DIAMOND (white),			
WORDEN (black):			
2-yr., No. 1 grade.....	.25	2.00	15.00
1-yr., No. 1 grade.....	.20	1.75	12.00
CACO (red), CHAMPAGNE (amber),			
DELAWARE (red), PORTLAND (white):			
2-yr., No. 1 grade.....	.30	2.25	18.00
1-yr., No. 1 grade.....	.25	2.00	14.00

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Varieties: **MARY WASHINGTON**, **PARADISE**

	Per 25	Per 100	Per 250	Per 1000
3-yr., heavy No. 1 grade.....	\$1.25	\$4.00	\$8.25	\$28.00
2-yr., heavy No. 1 grade.....	.75	2.50	4.75	16.00
1-yr., heavy No. 1 grade.....	.60	2.00	3.50	10.00

RHUBARB ROOTS

Varieties: **VICTORIA**, **MYATT'S LINNAEUS**

	Per 25	Per 100	Per 250	Per 1000
2-in. cal. and up, forcing grade.....	\$2.75	\$9.50	\$22.50	\$85.00
1 1/2 to 2-in. cal.....	2.00	6.50	15.00	55.00
1 to 1 1/2-in. cal.....	1.50	4.50	10.00	35.00
3/4 to 1-in. cal.....	1.25	3.50	7.50	25.00
1/2 to 3/4-in. cal.....	1.00	2.50	5.00	16.00

BERRY PLANTS, No. 1 grade

	Per 10	Per 25	Per 100	Per 1000
Thorny Boysenberry	\$1.00	\$2.00	\$6.00	\$40.00
Thornless Boysenberry	1.00	2.00	7.00	50.00
Lucretia Dewberry.....	.60	1.25	4.00	30.00
Cumberland Raspberry	1.00	2.00	6.00	45.00
Indian Summer Raspberry	1.00	2.00	7.00	60.00
Latham Raspberry	1.00	2.00	6.00	50.00
St. Regis Raspberry	1.00	2.00	6.00	50.00
Sunrise Raspberry	1.00	2.00	7.00	60.00
Blowers Blackberry	1.00	2.00	6.00	40.00
Eldorado Blackberry	1.00	2.00	6.00	40.00

PRIVET HEDGE PLANTS

Our soil and climatic conditions are ideal for the production of good Privet, and we guarantee our stock to be as well grown and developed in grade as any in this country. Write for special prices on large numbers.

CALIFORNIA PRIVET
(*Ligustrum ovalifolium*)

	Per 10	Per 100	Per 1000
6 to 12 ins., 2 canes or more.....	\$0.65	\$ 5.00	\$ 40.00
12 to 18 ins., 3 canes or more.....	.75	6.00	50.00
1 1/2 to 2 ft., 3 canes or more.....	.85	7.00	60.00
2 to 3 ft., 4 canes or more.....	1.00	8.50	75.00
3 to 4 ft., 6 canes or more.....	1.50	12.50	110.00

IBOLIUM PRIVET (*Ligustrum ibolium*)
Can be furnished in exact grades and prices as California Privet listed above.

AMUR RIVER NORTH PRIVET
(*Ligustrum amurense*)

	Per 10	Per 100	Per 1000
12 to 18 ins., 3 canes or more.....	.80	6.50	55.00
1 1/2 to 2 ft., 3 canes or more.....	1.00	8.50	75.00
2 to 3 ft., 4 canes or more.....	1.40	12.00	105.00
3 to 4 ft., 6 canes or more.....	1.80	16.00	145.00

FREE PACKING FOR CASH WITH ORDER. Our Fall 1947 Wholesale List offers a complete line of nursery stock. If you did not receive a copy, write us today. When requesting wholesale rates, kindly use your printed stationery. If interested in large lots, kindly submit your list of requirements for special consideration.

unfavorable conditions they are said to be dormant.

This difference between rest period and dormancy is of great importance in the United States in determining the amount of cold injury that may be sustained by woody plants. Furthermore, it explains why certain plants may be successfully grown in much colder parts of the world and yet fail here. Our winter weather conditions are not uniform, in that it is quite common for us to have quite long periods of alternating warm and cold weather. Too often during midwinter or late winter the weather may be quite warm for several days, with above-freezing temperatures even at night, only to be quickly followed by a sudden and extreme drop in temperature. Such conditions are almost certain to result in cold injury to at least certain kinds of woody plants in which the rest period had been broken prior to the occurrence of warm weather, especially so if conditions are favorable for initiation of growth. The plants that were still in the rest period at the time of the warm weather or those with high heat requirement to start growth, as for example, the pecan, would be the only ones that would escape injury. To illustrate with an example: The Chinese chestnut tree has a shorter rest period or less chilling requirement than does the average Persian walnut tree. Now, suppose that during the months of November and December a sufficient number of hours of chilling temperatures were experienced to break the rest period or to satisfy the chilling requirement of the Chinese chestnut, but not that of the Persian walnut. Then suppose there was a period of two weeks or more of warm weather in January and it was ended by a sudden drop to below freezing temperatures. Later we should expect to find that some parts or tissues of the Chinese chestnut trees had been injured while the Persian walnut trees had survived without injury. Similar differences would be expected with other crops, such as peaches and apples, that have a difference in rest period or chilling requirement. Under the conditions just described the parts or tissues of the tree that are most likely to be injured are those that first become active with the coming of warm weather, such as the pith in the wood, the flower buds and, later, the cambium or the leaf buds. This explains why peach fruit buds and the catkins of the European filbert are often killed in the east during the winter.

Some kinds of woody plants are
[Continued on page 55.]

FOR FALL or SPRING DELIVERY

LINING-OUT STOCK

Field-Bed Transplants

(X Indicates times transplanted)

	Each 100 rate	Each 1000 rate		Each 100 rate	Each 1000 rate
Arbutus, Globe, X, 3 to 6 ins.	\$0.15	\$0.14	Juniperus glauca hetzi, X,		
Arbutus, Globe, XX, 5 to 8 ins.	.20		6 to 8 ins.	.30	
Azalea Ghent Hybrids, X,			Juniper, Irish, XX, 5 to 8 ins.	.20	
1 to 2 ins.	.14		Juniperus stricta, X, 3 to 6 ins.	.20	
Azalea mollis, X, 1 to 2 ins.	.10	.09	Juniperus virginiana, X, 4 to 6 ins.	.10	
Azalea mollis, XX, 2 to 4 ins.	.14	.13	Juniperus virginiana, X, 6 to 9 ins.	.13	
Azalea mollis, XX, 4 to 6 ins.	.25		Juniperus virginiana, XX,		
Azalea mollis, XX, 6 to 9 ins.	.35		9 to 12 ins.	.20	
Azalea mollis, yellow, XX,			Koeleria paniculata, 6 to 12 ins.	\$0.12	
2 to 4 ins.	.25		Laburnum vulgare, S., 6 to 12 ins.	.10	
Azalea mollis, yellow, XX,			Leucothoe catesbaei, XX,		
4 to 6 ins.	.35		3 to 6 ins.	.18	\$0.17
Boxwood, Hardy Korean, X,			Mahonia aquifolium, S., 2 to 6 ins.	.06	
4 to 6 ins.	.14		Maple, Silver (Dasydium),		
Colorado Blue Spruce, X, 2 to 4 ins.	.09		sdlg., 2 to 3 ft.	.20	
Cornus capitata, S, 6 to 12 ins.	.08		Oak, Pin, sdlg., 6 to 12 ins.	.08	
Cotoneaster acuminata, S,			Philadelphus coronarius, X,		
6 to 12 ins.	.08		12 to 18 ins.	.12	
Cypress, Lawson, S, 3 to 6 ins.	.10		Pieris japonica, XX, 3 to 5 ins.	.20	.19
Cypress, Lawson, X, 4 to 6 ins.	.20		Privet, Regel, (sdlg.-grown),		
Cytisus scoparius (Scotch Broom),			XX, 12 to 18 ins.	.07	.06
sdlg., 8 to 12 ins.	.10	.09	Privet, Regel, (sdlg.-grown),		
Euonymus carrierei, X, 4 to 8 ins.	.10	.09	XX, 18 to 24 ins.	.09	.08
Euonymus coloratus, X, 4 to 8 ins.	.10	.09	Retinospora filifera aurea, X,		
Euonymus fortunei, X, 4 to 8 ins.	.10	.09	3 to 6 ins.	.20	
Euonymus patens, X, 4 to 8 ins.	.10	.09	Rhododendron hybrid, X, 2 to 6 ins.	.32	.30
Euonymus vegetus, X, 3 to 6 ins.	.10	.09	(Grown from select red-blooming plants. These		
Euonymus vegetus, XX, 6 to 12 ins.	.15		are very hardy. Shipped with soil on roots.)		
Ilex crenata convexa (bullata),			Taxus capitata, X, 4 to 6 ins.	.16	.15
X, 2 to 4 ins.	.14	.13	Taxus cuspidata, X, 3 to 5 ins.	.15	.14
Ilex crenata convexa (bullata),			Taxus cuspidata, X, 5 to 7 ins.	.18	.17
XX, 4 to 6 ins.	.17	.16	Tsuga canadensis, XX, 6 to 8 ins.	.22	.21
Ilex glabra, X, 2 to 4 ins.	.15		Tsuga canadensis, XX, 8 to 12 ins.	.27	.25
Ilex rotundifolia, X, 2 to 4 ins.	.14	.13	Viburnum opulus nanum, X,		
Ilex rotundifolia, XX, 4 to 6 ins.	.18	.17	2 to 4 ins.	.10	.09
Juniper, Andorra, X, 4 to 6 ins.	.14		Viburnum opulus nanum, XX,		
Juniper, Andorra, X, 6 to 9 ins.	.17		2 to 4 ins.	.15	
Juniperus glauca hetzi, X,			Vitex agnuscastus, S., 3 to 6 ins.	.06	
4 to 6 ins.	.25		Vitex agnuscastus, X, 6 to 12 ins.	.12	

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SPECIMEN EVERGREENS

	Per 10	Per 100
Juniperus chinensis keteleeri, 4 to 5 ft., xxx.	\$57.50	\$550.00
Juniperus virginiana canaerti, 3 1/2 to 4 ft., xxx.	52.50	500.00
Juniperus virginiana hillii (Heavy), 4 to 5 ft., xxx.	67.50	650.00
Juniperus virginiana hillii (Heavy), 5 to 6 ft., xxx.	77.50	750.00
Taxus cuspidata, 2 to 2 1/2 ft., xxx.	67.50	650.00
Taxus cuspidata capitata, 2 to 2 1/2 ft., xxx.	70.00	750.00
Taxus cuspidata capitata, 2 1/2 to 3 ft., xxx.	95.00	900.00
Taxus cuspidata intermedia, 15 to 18 ins., xxx.	40.00	375.00
Taxus media brownii, 15 to 18 ins., xxx.	40.00	375.00
Taxus media hicksii, 15 to 18 ins., xxx.	22.50	200.00
Taxus media hicksii, 18 to 24 ins., xxx.	30.00	275.00

Each x means once transplanted.

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Also a good assortment of other Specimen Evergreens.

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Plant Notes Here and There

By C. W. Wood

A North Carolina friend of this column, having read something about the southern wild gingers, wonders if they have garden value. My experience with them is so limited that I am not prepared to discuss them at length. The evergreen kinds that I have had were, with one exception, *Asarum virginicum*, rather tender for northern Michigan's severe winters. The ones that I know are of two kinds, having either heart-shaped or kidney-shaped leaves, which are mostly veined or mottled with pretty red and purple tints in winter. The foliage alone would make them worth growing where they are hardy. In fact, as you probably know, wild gingers are mainly valued for their foliage, the jug-shaped flowers usually being hidden under the leaves. But if one wants to take the trouble to search, he would find beauty in the large mahogany flowers of *A. shuttleworthii*. I should expect any of the evergreen kinds to be good property in neighborhood nurseries in warmer sections.

Linum Arboreum.

Another southern reader asks about *Linum arboreum*, to which I can reply with more enthusiasm, for it is not only fairly hardy this far north, but it is as permanent as any flax can be, and it is spectacular when it covers itself under a carpet of gold in June. Our plant is what botanists call a subshrub, meaning that it is not quite a shrub, yet it is not an herb either. The nearest comparable type of plant that I recall is the candytuft, *Iberis sempervirens*. *L. arboreum* makes a stiff bush to a height of eight inches and is always an ornament. Like most linums, it is not long-lived. It certainly is not long-lived here where it cannot be depended upon to survive a severe winter, and not even where it is hardy, I am told. But it is so easily grown from seeds and is so easily satisfied in any sunny well drained spot that short life would be of little concern.

The Maiden Pink.

Last summer on one trip I visited twenty-odd neighborhood nurseries, and of that number just seven had the maiden pink, *Dianthus deltoides*, on their grounds. One does not go around asking growers why they do this and do not do that, but I have wondered ever since why a plant of

its wide usefulness is so sadly neglected. There might be some reason for not growing it from seeds, because it varies so much that gardeners often refuse to buy seedlings; on the other hand, named varieties are always available, and they are so easily reproduced vegetatively by cuttings or divisions that one could find something in the group to suit almost any gardener.

It is no more than natural that a plant of its wide range, from Scotland to Japan, should vary in color and height, especially when it is not at all exacting about soil or exposure, being found in dry fields, in more or less wet meadows, on mountains, in lowlands and along the edges of woods. One can find a plant for almost any situation; the forms vary from *serpyllifolius*, which may be found as *peristeri*, *prichardi*, *supinus* or otherwise, and is a perfectly flat mat not over an inch or two high, often with lovely glaucous leaves, to other varieties which are a foot tall or higher and of wide-spreading habit. In addition, many garden

forms have been segregated and are available from specialists. Of the latter, Bowles' variety, with dark bronze-tinged foliage and deep pink flowers, and Wisley variety, with similar leafage and showy crimson blooms, are especially attractive. The possibilities of the maiden pink as a money-maker in the neighborhood nursery have scarcely been touched. As a plant for paved areas, as a carpet for alpine lawns or dry slopes in sun or part shade and in a myriad other roles, it has merits seldom dreamed of. All of this is said with conviction in the face of its present popularity in gardens.

Lungworts.

As has been the case with many of our good garden plants, lungworts were famous for real or supposed medicinal values long before they were used as ornaments. All the old herbalists were high in their praises of one, *Pulmonaria officinalis*, at least. Its blotched leaves suggested to them, as Robert Turner wrote, that "God hath imprinted upon the Plants,

FRUIT TREE SEEDLINGS

APPLE SEEDLINGS

Per 100 Per 1000

1/4-inch and up, branched roots.....	\$3.50	\$30.00
1/4-inch and up, straight roots.....	3.20	28.00
No. 1, 3/16 to 1/4-inch, branched roots.....	2.90	25.00
No. 1, 3/16 to 1/4-inch, straight roots.....	2.90	25.00
No. 2, 2/16 to 3/16-inch, straight roots.....	2.10	18.00
No. 3, about 2/16-inch.....	1.40	12.00
Special Stub Grade, 2 1/2/16-inch and up. Suitable for whole root grafting and for lining out to bud.....	2.10	18.00
Grafter Grade, 2/16-inch and up. Suitable for making one or more piece-root grafts.....	1.70	14.00

CHERRY, MAZZARD

1/4-inch and up.....	3.50	28.00
No. 1, 3/16 to 1/4-inch.....	3.00	26.00
No. 2, 2/16 to 3/16-inch.....	2.40	20.00
No. 3, about 2/16-inch.....	1.80	15.00

PEAR, BARTLETT

1/4-inch and up, straight roots.....	3.20	28.00
No. 1, 3/16 to 1/4-inch, straight roots.....	2.90	25.00
No. 2, 2/16 to 3/16-inch, straight roots.....	2.10	18.00
No. 3.....	1.70	14.00

PLUM, NATIVE

No. 1, 3/16 to 1/4-inch.....	5.50	50.00
No. 2, 2/16 to 3/16-inch.....	4.00	35.00
No. 3, about 2/16-inch.....	2.50	20.00

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FRUIT TREES AND ORNAMENTALS

APPLE

	Per 10	Per 100	Per 1000
2-yr., 11/16-in.	\$6.00	\$50.00	\$450.00
2-yr., 9/16-in.	5.00	45.00	400.00
2-yr., 7/16-in.	4.00	35.00	300.00
1-yr., 4 to 5 ft.	4.50	38.00	350.00
1-yr., 3 to 4 ft.	3.50	30.00	270.00

	Varieties	Paragon Winesap
Anoka	Early Harvest	Smokehouse
Bonum	Early Red Bird	Stayman
Close	Grimes Golden	Summer Rambo
Cortland	Hyslop Crab	Summer Yellow
Delicious	Jonathan	Delicious
Double Red	Liveland Raspberry	Winter Banana
Delicious	Lodi	Winesap
Double Red Duchess	Lowry	Yellow Delicious
Double Red	Maiden Blush	Yellow Transparent
Jonathan	M. B. Twig	York Imperial
Double Red Stayman	McIntosh	
	N. W. Greening	

PEACH

	Per 10	Per 100	Per 1000
11/16-in., 5 to 7 ft.	\$6.00	\$50.00	\$450.00
9/16-in., 4 to 6 ft.	5.00	45.00	400.00
7/16-in., 3 to 5 ft.	4.50	40.00	350.00

	Varieties	Mayflower
Belle of Ga.	Golden East	Red Bird
Brackett	Golden Jubilee	Redhaven
Carman	Halehaven	Salberta
Champion	Heath Cling	Shipper's Red
Hiley	Indian	Slappy
Crawford's Early	J. H. Hale	Sunhigh
Early Elberta	Late Elberta	Triogem
Elberta	Lizzie	
Fireglo		

PLUM

	Per 10	Per 100
11/16-in.	\$9.50	\$85.00
9/16-in.	8.00	75.00
7/16-in.	6.50	60.00

	Varieties	Red June
Abundance	European Prune	S. Damson
Burbank	Mammoth Golden	

KIEFFER PEAR

	Per 10	Per 100
4 to 6 ft.	\$ 7.50	\$65.00

NUT TREES

	Per 100	Per 1000
Black Walnut, 2 to 3 ft.	\$ 7.00	\$ 60.00
Black Walnut, 3 to 4 ft.	8.50	75.00
American Filbert, 2 to 3 ft.	8.50	75.00
American Filbert, 3 to 4 ft.	11.00	100.00
Papershell Pecan, 2 to 3 ft.	10.00	90.00
Papershell Pecan, 3 to 4 ft.	13.50	125.00

EVERGREENS, CONIFEROUS

	Each	Per 10
Arborvitae, American, 3 to 4 ft.	\$3.00	\$27.50
Arborvitae, American, 4 to 5 ft.	4.50	40.00
Arborvitae, American, 5 to 6 ft.	5.50	50.00
Arborvitae, American Pyramidal, 2 to 3 ft.	2.75	25.00
Arborvitae, American Pyramidal, 3 to 4 ft.	3.50	30.00
Hemlock, Canadian, 18 to 24 ins.	2.25	20.00
Hemlock, Canadian, 2 to 3 ft.	3.25	30.00
Hemlock, Canadian, 3 to 4 ft.	4.00	37.50
Hemlock, Canadian, 4 to 5 ft.	5.50	50.00
Juniperus excelsa stricta, 18 to 24 ins.	2.25	20.00
Juniperus excelsa stricta, 24 to 30 ins.	2.75	25.00
Juniper, Irish, 2 to 3 ft.	1.75	15.00
Juniper, Irish, 3 to 4 ft.	2.50	22.50
Juniper, Irish, 4 to 5 ft.	3.00	27.50
Juniper, Irish, 5 to 6 ft.	3.75	35.00
Juniper, Irish, 6 to 7 ft.	4.25	37.50
Juniper, Meyer, 24 to 30 ins.	2.75	25.00
Juniper, Meyer, 30 to 36 ins.	3.50	32.50
Juniper, Pfitzer, 18 to 24 ins.	2.25	20.00
Juniper, Pfitzer, 2 to 3 ft.	3.00	27.50
Juniper, Pfitzer, 3 to 4 ft.	4.00	37.50

EVERGREENS, CONIFEROUS—Cont.

	Each	Per 10
Juniper, Savin, 3 to 4 ft.	\$3.50	\$32.50
Juniper, Savin, 4 to 5 ft.	4.50	40.00
Pine, Mugho, 24 to 30 ins.	2.75	25.00
Pine, Mugho, 30 to 36 ins.	3.50	32.50
Pine, Mugho, 36 to 42 ins.	4.50	40.00
Spruce, Norway, 2 to 3 ft.	2.00	17.50
Spruce, Norway, 3 to 4 ft.	2.75	25.00

EVERGREENS, BROAD-LEAVED

	Each	Per 10
Cotoneaster microphylla, 18 to 24 ins.	\$2.00	\$17.50
Cotoneaster microphylla, 24 to 30 ins.	2.75	25.00
Elaeagnus pungens fruitlandi, 2 to 3 ft.	2.50	22.50
Elaeagnus pungens fruitlandi, 3 to 4 ft.	3.25	30.00
Elaeagnus pungens fruitlandi, 4 to 5 ft.	4.50	40.00
English Laurel, 2 to 3 ft.	2.25	20.00
English Laurel, 3 to 4 ft.	3.00	27.50
Euonymus patens, 18 to 24 ins.	1.50	12.50
Euonymus patens, 2 to 3 ft.	2.00	17.50
Mahonia aquifolium, 2 to 3 ft.	2.75	25.00
Nandina domestica, 15 to 18 ins.	1.50	12.50
Nandina domestica, 18 to 24 ins.	1.75	15.00
Pomegranate, 2 to 3 ft.	1.50	12.50
Pomegranate, 3 to 4 ft.	2.25	20.00
Pyracantha lalandi, 2 to 3 ft.	1.75	15.00
Pyracantha lalandi, 3 to 4 ft.	2.25	20.00
Pyracantha lalandi, 4 to 5 ft.	3.25	30.00
Pyracantha rogersiana, 18 to 24 ins.	1.50	12.50
Pyracantha rogersiana, 2 to 3 ft.	2.25	20.00
Viburnum rhytidophyllum, 2 to 3 ft.	2.25	20.00
Viburnum rhytidophyllum, 3 to 4 ft.	3.00	27.50
Viburnum rhytidophyllum, 4 to 5 ft.	3.75	35.00

SHADE TREES

	Each	Per 10
Ash, American White, 5 to 8 ft.	\$1.75	\$15.00
Ash, American White, 8 to 10 ft.	2.25	20.00
Birch, European White, 5 to 8 ft.	2.50	22.50
Birch, European White, 8 to 10 ft.	3.00	27.50
Dogwood, Pink-flowering, 5 to 6 ft., B&B.	6.50	60.00
Dogwood, Pink-flowering, 6 to 7 ft., B&B.	8.00	75.00
Elm, American and Chinese, 6 to 8 ft.	1.50	12.50
Elm, American and Chinese, 8 to 10 ft.	2.00	17.50
Gum, Sour and Sweet, 4 to 6 ft.	1.75	15.00
Gum, Sour and Sweet, 6 to 8 ft.	2.50	22.50
Gum, Sour and Sweet, 8 to 10 ft.	3.25	30.00
Poplar, Lombardy, 6 to 8 ft.	.75	6.00
Poplar, Lombardy, 8 to 10 ft.	.85	7.50
Poplar, Lombardy, 10 to 12 ft.	1.35	12.00
Tulip Tree, 6 to 8 ft.	2.00	17.50
Tulip Tree, 8 to 10 ft.	2.75	25.00
Walnut, Black, 4 to 6 ft.	1.20	10.00
Walnut, Black, 6 to 8 ft.	1.60	14.00
Willow, Weeping, 5 to 6 ft.	1.00	9.00
Willow, Weeping, 6 to 8 ft.	1.50	12.50

LOVELL PEACH PITS—Approximately 5000 to bu. Available for immediate delivery. 1 to 5 bu., \$3.00 per bu.; 5 to 25 bu., \$2.85 per bu.; 25 to 100 bu., \$2.75 per bu.; 100 bu. or more, \$2.50 per bu.

RHODODENDRON, AZALEA and KALMIA

Offered for this Fall or Spring '48 shipment in specimen collected plants.

	Per 10	Per 100
Rhododendron Catawbiense, 2 to 3 ft.	\$27.50	\$250.00
Rhododendron Catawbiense, 3 to 4 ft.	32.50	300.00
Rhododendron Maximum, 2 to 3 ft.	25.00	225.00
Rhododendron Maximum, 3 to 4 ft.	30.00	275.00
Azalea Calendulacea, 2 to 3 ft.	17.50	150.00
Azalea Calendulacea, 3 to 4 ft.	22.50	200.00
Azalea Nudiflora, 2 to 3 ft.	20.00	175.00
Azalea Nudiflora, 3 to 4 ft.	25.00	225.00
Kalmia Latifolia, 18 to 24 ins.	20.00	175.00
Kalmia Latifolia, 2 to 3 ft.	25.00	225.00

WAYNESBORO NURSERIES, Waynesboro, Va.

Herbs, and Flowers, as it were in Hieroglyphicks, the very signature of thier vertues," indicating by its blotches that it was useful "to help the diseases of the lungs and for coughs, wheezings and shortness of breath, which is cureth both in man and beast," according to Culpepper. In addition to their interest for students of early garden literature and for herb growers, the plants have definite garden value not easily assumed by any other plant, except perhaps by their near relatives, the mertensias.

Because they delight in moisture and shade, lungworts should be especially useful to gardeners who have situations of that kind to clothe. One does not need shade for their comfort, however, if moisture can be supplied to them during the vegetative period. It must be admitted that lack of shade in light soil is a serious handicap, for it takes constant attention from the hose during dry weather to keep them contented. Experience teaches that the best situation for these plants is in at least half shade in a soil rich in leaf mold. Then when they are growing well, dividing every third or fourth year is recommended.

The kind most often met in this country seems to be *P. saccharata*, a rather variable species when grown from seeds, always with mottled leaves, I think, with gray, silver or white blotches on green. As the mottling of the leaves is one of the plant's greatest charms, with careful selection, one should be able to find the kind best suited to one's needs.

The flower color also varies, ranging from a pure white form, alba, through shades of red to blue and purple. Apparently most of the material in American nurseries has been vegetatively reproduced from blue or purple-flowered plants, for it runs consistently to these shades.

To many who know them, the red-flowered forms are preferred, and these sometimes appear among seedlings. A rather new named form, Mrs. Moon, will please many with its bright pink and soft blue colors. All forms of *P. saccharata* are among the earliest to bloom, surprising the gardener with a display of color before spring has fairly started.

The favorite of the herbalists, *P. officinalis*, the only other kind with variegated leaves, is not well represented in America and may have to be searched for in old gardens. I have only seen it a few times in the past decade; so I suspect that it is becoming scarce. It should not be allowed to disappear, for it has definite garden value. Its hairy foliage

[Continued on page 62.]

LINING-OUT STOCK for FALL

Per 100 Per 1000

<i>Acer Pal. Atropurpureum</i> (seedling grown, very good strain), 3-yr. transpl., 10 to 15 ins.	\$ 75.00	.....
<i>Acer Pal. Atropurpureum</i> , 1-yr. grafts.	100.00	.....
<i>Azalea Yodogawa</i> , 2-yr. bedded cuttings, 6 to 10 ins.	40.00	.....
<i>Biota Orientalis</i> , 2-yr. sdgls., 6 to 10 ins.	5.00	\$ 40.00
<i>Berberis Atropurpureum</i> , strong 1-yr. sdgls., 6 to 10 ins.	5.00	30.00
These are grown in field rows, with plenty of room.		
<i>Cornus Florida</i> , 1-yr. sdgls. from beds, 10 to 18 ins.	5.00	30.00
<i>Cotoneaster Divaricata</i> , strong 1-yr. sdgls., 6 to 12 ins.	12.00	100.00
<i>Cotoneaster Horizontalis</i> , strong 1-yr. sdgls., 3 to 5 ins.	12.00	100.00
<i>Cotoneaster Horizontalis</i> , 2-yr. transpl., 6 to 10 ins.	25.00	200.00
<i>Daphne Mezereum</i> , 3-yr. transpl., 6 to 10 ins.	20.00	.....
<i>Daphne Mezereum Alba</i> , 3-yr. transpl., 6 to 10 ins.	20.00	.....
<i>Forsythia Spectabilis</i> (true), 2-yr. C., 18 to 30 ins.	10.00	60.00
<i>Forsythia Suspensa</i> (true), 2-yr. C., 18 to 30 ins.	10.00	60.00
<i>Juniperus Stricta</i> , 1-yr. transpl., heavy, 4 to 6 ins.	20.00	180.00
<i>Juniperus Hibernica</i> , 3-yr. transpl., 10 to 15 ins.	30.00	250.00
<i>Juniperus Squam. Meyer</i> , 1-yr. transpl., 6 to 9 ins.	25.00	.....
<i>Juniperus Pfitzeriana</i> , strong 1-yr. grafts, 8 to 12 ins.	60.00	.....
<i>Picea. Koster Blue Spruce</i> , 1-yr. grafts.	100.00	.....
<i>Rhododendron Hybrid Sdgs.</i> , 3-yr. transpl., 6 to 10 ins.	30.00	.....
<i>Rhododendron Hybrid Sdgs.</i> , 3-yr. transpl., 10 to 15 ins.	50.00	.....
<i>Rhodotypus Kerrioides</i> , 1-yr. sdgls., 10 to 15 ins.	10.00	75.00
<i>Taxus Cuspidata</i> (spreading), 3-yr. transpl., 8 to 12 ins.	35.00	300.00
<i>Taxus Cuspidata</i> (spreading), 2-yr. transpl., 8 to 10 ins.	25.00	200.00
<i>Taxus Capitata</i> (from tip cuttings), 2-yr. transpl., 8 to 12 ins.	30.00	250.00
<i>Taxus Hatfieldi</i> , 3-yr. transpl., 10 to 12 ins.	40.00	350.00
<i>Taxus Hatfieldi</i> , 2-yr. transpl., 8 to 10 ins.	30.00	250.00
<i>Taxus Hicksi</i> , 3-yr. transpl., 10 to 15 ins.	40.00	350.00
<i>Taxus Brevifolia</i> , 2-yr. transpl., 6 to 9 ins.	30.00	250.00
<i>Thuja Woodwardi</i> (globe), 3-yr. transpl., 8 to 10 ins.	35.00	300.00
<i>Syringa Vulgaris</i> , strong 2-yr. sdgls., 12 to 18 ins.	10.00	90.00
<i>Viburnum Carlesi</i> , 1-yr. grafts, 10 to 15 ins.	50.00	.....
<i>Viburnum Carlesi</i> , 2-yr. grafts (cut back), 12 to 18 ins.	65.00	.....
<i>Helleboris Niger</i> (Christmas Rose), 1-yr. sdg.	15.00	100.00

These are of a selected strain.

All our stock is grown weed-free on good ground and has a beautiful color.

C. HOOGENDOORN

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NEWPORT, R. I.

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(*Tsuga Canadensis*)

Per 100

12 to 18 ins., XXX, sheared, B&B.	\$ 90.00
18 to 24 ins., XXX, sheared, B&B	150.00
2 to 2½ ft., XXX, sheared, B&B	250.00
2½ to 3 ft., XXX, sheared, B&B	300.00
3 to 3½ ft., XXX, sheared, B&B	400.00

Also

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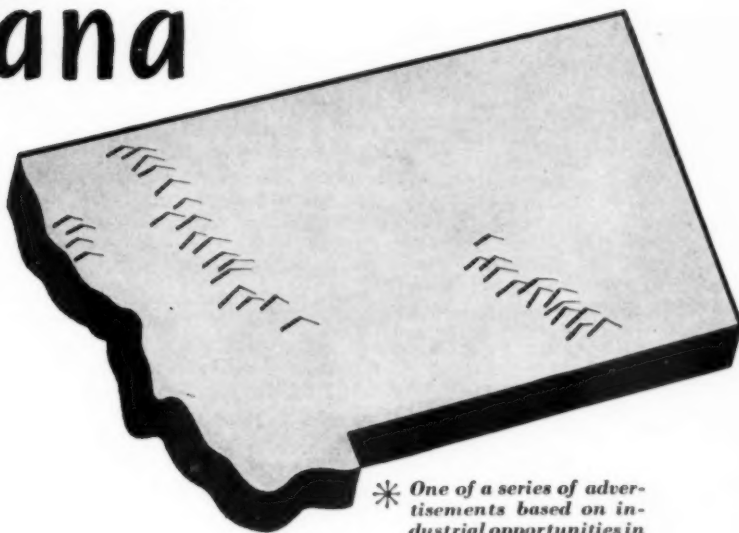
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Callicoon, N. Y.



Montana

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SCENIC BEAUTY



* One of a series of advertisements based on industrial opportunities in the states served by the Union Pacific Railroad.

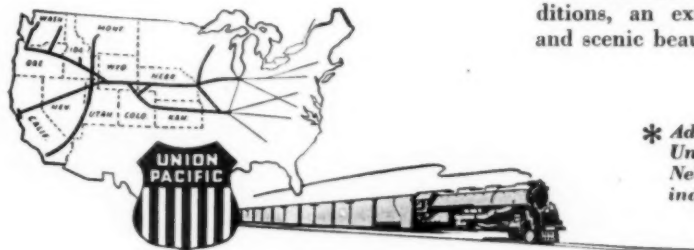
Known as the "Treasure State," Montana is richly endowed with raw materials essential to industrial production. Among the many metallic minerals are silver, copper, lead, manganese, chromium and molybdenum. Coal reserves have been estimated at over 400 billion tons. The majority of the state's cities are supplied with natural gas.

Montana is a top producer of cattle and sheep, the annual sheep production being approximately two million head with a wool clip of great value. In agriculture,

wheat takes first rank among grains. Sugar beets, potatoes, together with other vegetables, are grown on its farms. There are many thousand acres of forests, principally pine.

The Union Pacific Railroad serves Butte in the heart of the great mining area, and West Yellowstone—most popular rail entrance to the famous Yellowstone National Park.

Montana welcomes new industry. It has the space, materials, facilities and manpower to encourage firms seeking new locations. Additional advantages are good living conditions, an excellent educational system and scenic beauty.



* Address Industrial Department, Union Pacific Railroad, Omaha 2, Nebr., for information regarding industrial sites.

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THE STRATEGIC MIDDLE ROUTE

Quarantine Hearings

ANNOUNCE FOREIGN QUARANTINE HEARINGS.

A public hearing to consider what regulatory action is warranted under authority granted in an amendment to the plant quarantine act, approved July 31, and how such action may best be effected will be held at Washington, D. C., November 18 and 19, Secretary of Agriculture Clinton P. Anderson has announced. The hearing will open in the Jefferson auditorium of the South building, Fourteenth and Independence avenues, at 10 a. m.

The amendment under consideration authorizes the Secretary of Agriculture "to limit entry of nursery stock from foreign countries under such rules and regulations as he may deem necessary."

If determined as necessary, it may be required that nursery stock "be grown under post-entry quarantine by or under the supervision of the United States Department of Agriculture for the purpose of determining whether imported nursery stock may be infested or infected with plant pests not discernible by port-of-entry inspection. Also contained in the amendment is a provision that if imported nursery stock is found to be infested or infected with plant pests, the Secretary of Agriculture is authorized to prescribe remedial measures as he may deem necessary to prevent the spread of the pests.

At the hearing it is intended that the recent amendment be discussed in its relation to the other sections of the plant quarantine act, particularly as to how any limitations that may be found necessary should be accomplished. The applicability of the restrictive procedures provided for in section 5 of the plant quarantine act in setting up limitations on the entry of plant propagating material, including bulbs, will be discussed.

Matters to which particular attention is directed include: Growing imported nursery stock, plants and bulbs, in whole or in part, under post-entry quarantine by the permittee or his agent under the supervision of the United States Department of Agriculture; requiring further limitations as to size and age of such imports, including the desirability of limiting the entry of certain species or classes of woody plants to seeds only, where seeds will serve the purpose of providing the plants desired; establishing numerical limitations on

such imports, and determining the dates on which any resultant action should be made effective.

There will also be explored the possibility that under certain conditions the measures to be taken may best be effected through prohibitions on the entry of hosts of foreign plant pests not known to occur in this country.

In the notice of public hearing, which was released October 17, there are listed some thirty-five injurious insects and plant diseases that may warrant the placing of limitations, restrictions or prohibitions on the entry of known host plants from affected countries.

As part of the hearing, consideration will also be given to a revision of the nursery stock, plant and seed quarantine No. 37 and supplemental regulations. Any limitations, restrictions or prohibitions that might be set up would logically come within the scope of this quarantine.

Among other matters to be dis-

cussed in connection with a revision of quarantine No. 37 is the desirability of treatments to be applied to imported nursery stock, plants and bulbs to destroy possible vectors of virus diseases and certain other insects as well as fungus and bacterial disease and nematodes, and the advisability of requiring that all such imported propagating material be entered at designated inspection stations.

Persons interested in discussing any of these matters at the hearing are invited to be present or to be represented by attorney. Communications may be addressed to the chief of the bureau of entomology and plant quarantine, United States Department of Agriculture, Washington 25, D. C.

A. A. N. PREHEARING CONFERENCE.

In accordance with the policy adopted by the board of governors of the American Association of Nurserymen, "... to seek ... adequate

LINING-OUT STOCK.

Place your order now and avoid disappointment later. We are not increasing our production. If you did not receive our list, a copy will be mailed on request.

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Visitors always welcome.

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The lovely

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SUB-ZERO HYBRID TEAS

Large and beautiful as any.

Easy to grow and long to live.

Save replacement expense.

Also Yellow and Orange Climbers.

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A complete line of well grown hardy plant material
Evergreens and Lining-out Stock

ROSA MULTIFLORA JAPONICA

Seedlings Per 1000

4 to 6 mm. \$30.00

3 to 4 mm. 20.00

2 to 3 mm. 15.00

Field run, 2 to 6 mm. 15.00

Sample for \$2.00. Cash with order.

BROOKVILLE NURSERIES

Glen Head, N. Y.

SHEARED SPECIMEN EVERGREENS FOR LANDSCAPE TRADE

THREE TIMES TRANSPLANTED

	Per 100	Per 1000
<i>Juniperus chinensis</i> , 4 to 5 ft., B&B	\$400.00	\$4000.00
<i>Juniperus chinensis</i> , 5 to 6 ft., B&B	500.00	5000.00
<i>Juniperus chinensis mascula</i> , 3 to 4 ft., B&B	350.00	3500.00
<i>Juniperus chinensis mascula</i> , 4 to 5 ft., B&B	400.00	4000.00
<i>Juniperus chinensis pfitzeriana</i> , 18 to 24 ins., B&B	275.00	2750.00
<i>Juniperus chinensis pfitzeriana</i> , 24 to 30 ins., B&B	325.00	3250.00
<i>Juniperus communis ashfordi</i> , 3 to 4 ft., B&B	150.00	1500.00
<i>Juniperus communis ashfordi</i> , 4 to 5 ft., B&B	200.00	2000.00
<i>Juniperus. Irish</i> , 3 to 4 ft., B&B	200.00	2000.00
<i>Juniperus. Irish</i> , 4 to 5 ft., B&B	225.00	2250.00
<i>Juniperus virginiana</i> , 4 to 5 ft., B&B	350.00	3500.00
<i>Juniperus virginiana</i> , 5 to 6 ft., B&B	400.00	4000.00
<i>Juniperus virginiana burki</i> , (Silver Blue), 4 to 5 ft., B&B	550.00	5500.00
<i>Juniperus virginiana burki</i> , (Silver Blue), 5 to 6 ft., B&B	650.00	6500.00
<i>Juniperus virginiana glauca</i> , 3 to 4 ft., B&B	450.00	4500.00
<i>Juniperus virginiana glauca</i> , 4 to 5 ft., B&B	550.00	5500.00
<i>Juniperus virginiana keteleeri</i> , 3 to 4 ft., B&B	450.00	4500.00
<i>Juniperus virginiana keteleeri</i> , 4 to 5 ft., B&B	550.00	5500.00
<i>Juniperus virginiana schottii</i> , 4 to 5 ft., B&B	550.00	5500.00
<i>Juniperus virginiana pyramidiformis</i> (Dundee), 5 to 6 ft., B&B	650.00	6500.00
<i>Taxus cuspidata</i> , 15 to 18 ins., B&B	250.00	2500.00
<i>Taxus cuspidata</i> , 18 to 24 ins., B&B	400.00	4000.00

SHADE TREES

	Per 10	Per 100
<i>Elm. Chinese</i> , 5 to 6 ft.	\$ 5.50	\$ 50.00
<i>Elm. Chinese</i> , 6 to 8 ft.	10.00	90.00
<i>Elm. Chinese</i> , 8 to 10 ft.	15.00	140.00
<i>Maple. Norway</i> , 1 1/2 to 1 1/2 in.	30.00	250.00
<i>Maple. Norway</i> , 1 1/2 to 2 in.	32.00	300.00
<i>Maple. Norway</i> , 2 to 2 1/2 in.	50.00	450.00
<i>Maple. Soft</i> , 6 to 8 ft.	8.50	75.00
<i>Maple. Soft</i> , 8 to 10 ft.	12.50	100.00
<i>Poplar. Lombardy</i> , 6 to 8 ft.	4.50	40.00
<i>Poplar. Lombardy</i> , 8 to 10 ft.	6.00	50.00
<i>Poplar. Lombardy</i> , 10 to 12 ft.	7.50	65.00
<i>Willow. Niobe</i> , 8 to 10 ft.	12.50	100.00
<i>Willow. Niobe</i> , 1 1/2 to 1 1/2 in.	17.50	150.00
<i>Willow. Niobe</i> , 2 to 2 1/2 in.	22.50	200.00
<i>Willow. Pussy</i> , 2 to 4 ft.	3.00	25.00
<i>Willow. Pussy</i> , 3 to 4 ft.	4.00	35.00
<i>Willow. Pussy</i> , 4 to 5 ft.	5.50	50.00
<i>Willow. Thurlow</i> , 8 to 10 ft.	12.50	100.00
<i>Willow. Thurlow</i> , 1 1/2 to 1 1/2 in.	17.50	150.00
<i>Willow. Thurlow</i> , 1 1/2 to 2 in.	22.50	200.00
<i>Willow. Wisconsin</i> , 5 to 6 ft.	6.00	50.00
<i>Willow. Wisconsin</i> , 6 to 8 ft.	8.00	75.00

DECIDUOUS SHRUB SURPLUS

	Per 10	Per 100
<i>Almond. Pink-flowering</i> , 18 to 24 ins.	\$ 3.50	\$ 30.00
<i>Almond. Pink-flowering</i> , 2 to 3 ft.	4.50	40.00
<i>Athaea. Rose of Sharon. named varieties</i> , 2 to 3 ft.	2.50	20.00
<i>Athaea. Rose of Sharon. named varieties</i> , 3 to 4 ft.	3.00	25.00
<i>Berberis thunbergii</i> , 18 to 24 ins.	3.00	28.00
<i>Berberis thunbergii</i> , 24 to 30 ins.	3.80	35.00
<i>Berberis atropurpurea</i> , 15 to 18 ins.	3.00	25.00
<i>Berberis atropurpurea</i> , 18 to 24 ins.	3.75	32.50
<i>Cornus florida rubra</i> , 18 to 24 ins., bare root.	17.50	150.00
<i>Cornus florida rubra</i> , 2 to 3 ft., bare root.	20.00	175.00
<i>Forsythia fortunei, intermedia, spectabilis and suspensa</i> , 18 to 24 ins.	3.00	25.00
<i>Forsythia fortunei, intermedia, spectabilis and suspensa</i> , 2 to 3 ft.	4.00	35.00
<i>Forsythia fortunei, intermedia, spectabilis and suspensa</i> , 3 to 4 ft.	4.50	40.00

Above items only a partial list of stock grown.

Write for catalog.

Deciduous Shrub Surplus Continued

	Per 10	Per 100
<i>Honeysuckle. Bush. red, pink, white</i> , 2 to 3 ft.	\$ 3.50	\$ 30.00
<i>Honeysuckle. Bush. red, pink, white</i> , 3 to 4 ft.	4.50	35.00
<i>Lilac. Persian</i> , 18 to 24 ins.	3.00	25.00
<i>Lilac. Persian</i> , 2 to 3 ft.	4.00	35.00
<i>Spiraea Anthony Waterer</i> , 18 to 24 ins.	4.00	35.00
<i>Spiraea Anthony Waterer</i> , 24 to 30 ins.	5.00	40.00
<i>Spiraea vanhouttei</i> , 12 to 18 ins.	1.70	14.00
<i>Spiraea vanhouttei</i> , 18 to 24 ins.	2.00	18.00
<i>Spiraea vanhouttei</i> , 2 to 3 ft.	3.00	25.00
	Per 100	Per 1000
<i>Privet. Amur River North</i> , 12 to 16 ins., 3 br. up.	\$ 7.00	\$ 60.00
<i>Privet. Amur River North</i> , 16 to 24 ins., 3 br. up.	9.00	80.00
<i>Privet. Amur River North</i> , 2 to 3 ft., 4 br. up.	12.50	110.00
<i>Privet. Amur River North</i> , 3 to 4 ft., 4 br. up.	17.50	150.00
<i>Privet. California</i> , 12 to 18 ins., 3 br. up.	7.00	50.00
<i>Privet. California</i> , 18 to 24 ins., 3 br. up.	9.00	60.00
<i>Privet. California</i> , 2 to 3 ft., 4 br. up.	12.50	75.00
<i>Privet. California</i> , 3 to 4 ft., 4 br. up.	17.50	110.00
<i>Privet. Ibolium</i> , 12 to 18 ins., 3 br. up.	7.00	50.00
<i>Privet. Ibolium</i> , 18 to 24 ins., 3 br. up.	9.00	70.00
<i>Privet. Ibolium</i> , 2 to 3 ft., 4 br. up.	10.00	75.00
<i>Privet. Ibolium</i> , 3 to 4 ft., 4 br. up.	12.50	110.00
<i>Privet. Regal</i> , 12 to 18 ins.	15.00	120.00
<i>Privet. Regal</i> , 18 to 24 ins.	25.00	220.00
<i>Privet. Regal</i> , 24 to 30 ins.	30.00	280.00

ROSES

Climbing Roses. Tea, H.T. and H.P. Roses for February delivery.

	Per 100	Per 1000
2-year, No. 1	\$45.00	\$400.00
2-year, No. 1 1/2	40.00	350.00

Write for list of varieties.

LINING-OUT SHADE TREES

	Per 100	Per 1000
<i>Poplar. Lombardy</i> , 18 to 24 ins.	\$ 3.00	\$ 25.00
<i>Poplar. Lombardy</i> , 2 to 3 ft.	4.00	35.00
<i>Poplar. Lombardy</i> , 3 to 4 ft.	5.50	50.00
<i>Salix Niobe. Thurlow, Wisconsin. Pussy</i> , 18 to 24 ins.	3.00	25.00
<i>Salix Niobe. Thurlow, Wisconsin. Pussy</i> , 2 to 3 ft.	3.50	30.00
<i>Salix Niobe. Thurlow, Wisconsin. Pussy</i> , 3 to 4 ft.	4.50	40.00
<i>Ulmus americana</i> (Elm), 2 to 3 ft., 2-yr., Tr.	8.00	75.00
<i>Ulmus americana</i> (Elm), 3 to 4 ft., 2-yr., Tr.	12.50	100.00
<i>Ulmus americana</i> (Elm), 4 to 5 ft., 2-yr., Tr.	17.50	150.00

LINING-OUT SHRUBS

	Per 100	Per 1000
<i>Berberis thunbergii</i> , 6 to 9 ins., sdgs.	\$ 3.50	\$ 30.00
<i>Berberis thunbergii atropurpurea</i> , 3 to 6 ins., sdgs.	3.00	25.00
<i>Berberis thunbergii atropurpurea</i> , 6 to 9 ins., sdgs.	4.50	40.00
<i>Cornus alba sibirica</i> , 12 to 18 ins.	5.50	50.00
<i>Forsythia</i> , assorted varieties, 12 to 18 ins.	4.00	35.00
<i>Forsythia</i> , assorted varieties, 18 to 24 ins.	4.50	40.00
<i>Honeysuckle. bella alba and morrowi</i> , 12 to 18 ins.	4.50	40.00
<i>Honeysuckle. bella alba and morrowi</i> , 18 to 24 ins.	5.50	50.00
<i>Honeysuckle. zabeli</i> , 12 to 18 ins.	6.50	60.00
<i>Honeysuckle. zabeli</i> , 18 to 24 ins.	8.00	75.00
<i>Lilac. Persian</i> , 12 to 18 ins.	12.00	100.00
<i>Privet. Amur River North</i> , 6 to 12 ins.	3.00	25.00
<i>Privet. Amur River North</i> , 12 to 18 ins.	4.00	35.00
<i>Privet. Ibolium</i> , 6 to 12 ins.	3.00	25.00
<i>Privet. Ibolium</i> , 12 to 18 ins.	4.00	35.00
<i>Privet. Regal</i> , true type, 2-yr., from ctgs.	7.00	65.00
<i>Spiraea froebelii</i> , 2-yr., ctgs.	7.50	65.00
<i>Spiraea opulifolia aurea</i> , 12 to 18 ins.	5.50	50.00
<i>Spiraea opulifolia aurea</i> , 18 to 24 ins.	6.00	60.00
<i>Spiraea opulifolia nana</i> , 12 to 18 ins.	8.00	75.00
<i>Spiraea vanhouttei</i> , 12 to 18 ins.	4.50	40.00

ONARGA NURSERY CO.

Onarga, Illinois

protection from such hazards to American agriculture, horticulture and forestry through the agency of quarantine, port-of-entry inspection and post-entry growing requirements," a meeting will be held at 10 a. m., November 17, in the Capitol room, Hotel Statler, Washington, D. C., open to any member of the A. A. N., to discuss the proposed testimony of the association at the quarantine hearings and to give consideration to any new views that may be expressed.

Members who are unable to attend the meeting may express their opinions by writing the A. A. N. office at 636 Southern building, Washington 5, D. C., so that they may be considered before the committee's presentation November 18 and 19.

THE Garden House & Nursery, 3259 Northwestern avenue, Detroit, Mich., are now doing business under the name Village Garden House Nursery.



A. A. N. CIRCULAR FOR GIFT CERTIFICATE.

To promote its new gift certificate plan, the American Association of Nurserymen has prepared a circular, which will be used as a letter enclosure, to stimulate the sale of gift certificates.

Printed on white enamel paper, the circular contains a reproduction of the gift certificate as well as brief suggestions for plants to be used as gifts on holidays the year around, through the gift certificate plan. The new A. A. N. seal appears on the front cover, while the back is designed as an order blank for customers wishing to buy certificates, with the name and address of the member nursery printed at the top.

A newsletter has been sent to all A. A. N. members advising them that their pads of fifty certificates have been mailed, and a copy of the gift certificate letter enclosure has been attached. Urging the cooperation of individual members in order to make the plan a success, the letter contains additional suggestions for local promotion of the plan, as well as a detailed explanation of how the plan works.

A. A. N. PROCEEDINGS.

Members of the American Association of Nurserymen have recently received copies of the proceedings of the association's seventy-second annual convention, held last July at Boston, Mass.

In addition to the verbatim report of the meetings, the 176-page book contains portraits of the officers and members of the executive committee, a list of the new officers and committeemen, a list of the chapters and their delegates to the convention, a membership list, a copy of the bylaws as amended in 1947 and a copy of the certificate of incorporation.

NURSERYMAN KIYONO RETURNS TO ALABAMA.

An account of the experiences of Tsukasa Kiyono, an Alabama nurseryman who was forced to remain in Japan during the war, appeared in the October 14 issue of the Mobile Press newspaper, Mobile, Ala. Now employed as an assistant to J. Lloyd Abbot, owner of the Sunny Knoll Orchard & Nursery Co., Mobile, Mr. Kiyono went to Japan for a visit with his family in 1940 and was unable to return to the United States when the war began. Since he was a Japanese citizen, the United States government took over his nursery at Semmes,

LINING-OUT EVERGREENS

	Per 100	Per 1000
<i>Juniperus horizontalis plumosa</i> (Andorra Juniper)		
2-yr., from 2½-in. rose pots.....	\$ 22.50	\$ 200.00
<i>Picea glauca densata</i> (Black Hills Spruce)		
6 to 8 ins., xx.....	22.50	200.00
9 to 12 ins., xx.....	27.50	250.00
12 to 15 ins., xx.....	32.50	.....
<i>Taxus cuspidata capitata</i> (Upright Yew)		
2-yr., 6 to 8 ins., 2½-in. pots.....	40.00	375.00
9 to 12 ins., xxx, 4-yr., from open beds.....	100.00	900.00
12 to 15 ins., xxx, 4-yr., from open beds.....	150.00	1250.00
15 to 18 ins., xx, 4-yr., from open beds.....	185.00	.....
<i>Taxus cuspidata</i> (Spreading Yew)		
2-yr., from 2½-in. rose pots, 6 to 8 ins.....	30.00	275.00
<i>Taxus cuspidata intermedia</i> (Intermedia Yew)		
1-yr., from 2½-in. rose pots.....	22.50	200.00
2-yr., from 2½-in. rose pots.....	30.00	275.00
<i>Taxus media</i> (Anglojap Yew)		
2-yr., from 2½-in. rose pots.....	30.00	275.00
<i>Taxus media andersoni</i> (Anderson Yew)		
1-yr., from 2½-in. rose pots.....	22.50	200.00
2-yr., from 2½-in. rose pots, 6 to 8 ins.....	30.00	275.00
<i>Taxus media browni</i> (Brown's Yew)		
1-yr., from 2½-in. rose pots.....	22.50	200.00
2-yr., from 2½-in. rose pots, 6 to 8 ins.....	30.00	275.00
<i>Taxus media hicksi</i> (Hicks Yew)		
1-yr., from 2½-in. rose pots.....	22.50	200.00
2-yr., from 2½-in. rose pots, 6 to 8 ins.....	30.00	275.00
3-yr., from open beds, 6 to 9 ins., xx.....	35.00	325.00

50 at 100 rate.

500 at 1000 rate.

All prices F.O.B. Milwaukee.

Packing at cost.

Write for price lists.

BROWN DEER NURSERIES

Operated By

HOLTON & HUNKEL CO.

P. O. Box 1747

Milwaukee 1, Wis.

LINING-OUT SPECIAL

	Per 1000
<i>Ampelopsis veitchi</i> , 2-yr. tr.....	\$85.00
<i>Berberis thunbergi</i> , 6 to 9 ins., XX, sdgls.....	18.00
<i>Berberis thunbergi atropurpurea</i> ,	
3 to 6 ins., XX, sdgls.....	25.00
Row run, XX.....	35.00
6 to 9 ins., XX, sdgls.....	40.00
<i>Cornus Florida</i> ,	
8 to 12 ins., XX, sdgls.....	35.00
15 to 18 ins., XX, sdgls.....	60.00
<i>Tsuga Canadensis</i> , 4 to 6 ins., 3-yr. tr.....	90.00

ARTHUR DUMMETT

Bernardsville, N. J.

MAXWELL, BOWDEN & RICE,

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Wholesale Nurseries

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Splendid Stock

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Lining-out stock.

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SUNCREST EVERGREEN NURSERIES

Johnstown, Pa.

ANNOUNCING

QUALITY GLADIOLUS GARDENS, formerly operated by Edwin Sirois & Son, is retiring its senior partner. For the past seven years, young Mr. Sirois has managed the complete growing and sales operations and is well qualified to offer you the same outstanding bulbs and splendid service that you have enjoyed in dealing with us this past generation.

Our name — **QUALITY GLADIOLUS GARDENS** — remains the same and speaks for itself. Our business methods also will remain the same, except where a change will bring better bulbs or better service to you.

QUALITY GLADIOLUS GARDENS

Chester Sirois
ST. ANNE, ILL.

Ala., and the property he had accumulated during thirty-four years as a nurseryman in this country.

In Japan he was suspected of being pro-American, and the Japanese security police kept him under surveillance. The Kiyono residence at Tokyo was razed in a bombing raid.

The American victory in August, 1945, brought a change in Mr. Kiyono's status in Japan. He was sought as an adviser to Japanese industries seeking to readjust their operations in conformity with American ideas. However, when the opportunity to return to the United States was presented a few months ago, the Kiyonos welcomed it.

Safely back in the United States, Mr. and Mrs. Kiyono are now at the Sunny Knoll Orchard & Nursery Co., while their two daughters are attending colleges in Pennsylvania and Mississippi.

BOB WOMACK, manager of the Stuart Nursery, Desdemona, Tex., reports that the firm is completing a new lath house, 50x100 feet, which will be used mostly for container-grown plants. A new well has been sunk and an electric pump installed to serve the lath house and a near-by block of 10,000 pecan trees.



Princeton's prompt and efficient service on a very complete line of Quality Ornamental Nursery Stock will put money in your pocket.

Our prices are reasonable.

Our quality is high.

If you are not on our mailing list, please advise us.

'Send us your want list.

PRINCETON NURSERIES

PRINCETON, N. J.

Phone: Princeton 1776

ONE-YEAR CUTTINGS

Per 100 Per 1000

<i>Ligustrum ovalifolium</i> , 18 to 24 ins.....	\$2.50	\$22.00
<i>Forsythia spectabilis</i> , 18 to 24 ins.....	3.50	30.00

VAN HOF NURSERIES

View Ave. Middletown, R. I.

EVERGREEN LINERS

120,000 Potted liners.

Ask for our latest price list.

HEASLEY'S NURSERIES

Freeport Road, Butler, Pa.

Coming Events

MEETING CALENDAR.

For the benefit of state association officers who wish to set the time of midwinter meetings with a minimum of conflict, the following list is given of convention dates already made known. Secretaries of other associations are invited to notify the editor of further meeting dates as soon as they are set.

December 1 and 2, Minnesota State Nurserymen's Association, Lowry hotel, St. Paul.

December 3 and 4, Wisconsin Nurserymen's Association, Schroeder hotel, Milwaukee.

December 10, Western Pennsylvania Nurserymen's Association, Hotel Webster Hall, Pittsburgh.

January 5, 1948, Missouri State Nurserymen's Association, Muehlebach hotel, Kansas City.

January 5 and 6, New York State Nurserymen's Association, Hotel Pennsylvania, New York city.

January 6 and 7, Kansas Association of Nurserymen, Hotel Muehlebach, Kansas City, Mo.

January 6 and 7, Western Association of Nurserymen, Hotel Muehlebach, Kansas City, Mo.

January 7 to 9, Indiana Association of Nurserymen, Purdue University, Lafayette.

January 9 and 10, Iowa Nurserymen's Association, Hotel Kirkwood, Des Moines.

January 9 to 11, American Association of Nurserymen, Executive Committee, Hotel La Salle, Chicago.

January 12, American Association of Nurserymen, Special Meeting, Hotel La Salle, Chicago.

January 12, National Landscape Nurserymen's Association, Hotel La Salle, Chicago.

January 13 to 15, Illinois State Nurserymen's Association, Hotel La Salle, Chicago.

January 20, Oregon Association of Nurserymen, Heathman hotel, Portland.

January 21 to 23, New England Nurserymen's Association, Hotel Statler, Boston, Mass.

January 22 and 23, Tennessee State Nurserymen's Association, Hotel Andrew Johnson, Knoxville.

January 22 and 23, Ohio Nurserymen's Association, Neil House, Columbus.

January 25 to 27, Virginia Nurserymen's Association, Hotel John Marshall, Richmond.

January 26 and 27, Kentucky Nurserymen's Association, Lafayette hotel, Lexington.

January 28 to 30, Michigan Association of Nurserymen, Hotel Statler, Detroit.

February 4 and 5, Pennsylvania Nurserymen's Association, Penn-Harris hotel, Harrisburg.

February 17 to 19, American Pomological Society, Jefferson hotel, St. Louis, Mo.

March 5 and 6, Canadian Association of Nurserymen, Royal York hotel, Toronto, Ont.

April 17 to 20, Florida Association of Nurserymen, St. Petersburg.

N. L. N. A. MEETING DATE.

The National Landscape Nurserymen's Association will hold its winter meeting January 12 at the Hotel La Salle, Chicago, Ill., the day preceding the convention of the Illinois State Nurserymen's Association at the Hotel La Salle.

OREGON DATE.

The midwinter meeting of the Oregon Association of Nurserymen will be held January 20 at the Heathman hotel, Portland.

NEW ENGLAND.

Plans are now under way for the annual winter meeting of the New England Nurserymen's Association, which will be held January 21 to 23 at the Hotel Statler, Boston, Mass.

KENTUCKY DATES.

Howard G. Tilson, secretary, has announced that the winter meeting of the Kentucky Nurserymen's Association will be held January 26 and 27 at the Lafayette hotel, Lexington.

HORTICULTURAL MEETING.

The annual meeting of the Kansas State Horticultural Society will be held at the Kansas State College, Manhattan, December 4 and 5. Among the topics to be discussed will be the

proper use of the new insecticides, fungicides and hormones, George W. Kinkead, secretary, announces.

CANADIAN ASSOCIATION SETS MEETING DATES.

The twenty-fifth annual meeting of the Canadian Association of Nurserymen will be held March 5 and 6 at the Royal York hotel, Toronto, Ontario.

PENNSYLVANIA DATES.

Members and guests of the Pennsylvania Nurserymen's Association will meet February 4 and 5 at the Penn-Harris hotel, Harrisburg, for the annual winter meeting.

WESTERN PENNSYLVANIA GROUP PLANS MEETING.

The annual meeting of the Western Pennsylvania Nurserymen's Association will be held December 10 at the Hotel Webster Hall, Pittsburgh. The meeting will begin at 2:30 p.m., and dinner will be served at 6:30. A fine program is being planned by the program committee under the guidance of Walter P. Morrow, chairman.

Louis E. Wissenbach, secretary, reports that the association has had an excellent year and that membership now totals seventy-seven.

INDIANA SETS DATES.

Despite crowded conditions on the campus of Purdue University, lecture rooms, exhibit space and rooms have been made available for the annual winter convention of the Indi-

CHICAGO in JANUARY

If you plan—or hope—to be in Chicago for the nurserymen's meetings in January, it will be well for you to make your reservations for hotel accommodations at once.

Travel is still heavy. Chicago Loop hotels are continuously crowded, making it imperative that reservations be made well in advance. And you will want to be with the crowd at the La Salle.

So write for your hotel reservations now—you can cancel later if you find you cannot attend—to the **La Salle Hotel, La Salle at Madison, Chicago 2, Illinois**, mentioning that the reservation is for the nurserymen's meetings.

Meeting Dates:

AMERICAN ASSOCIATION OF NURSERYMEN, EXECUTIVE COMMITTEE, January 9-10-11, 1948.

AMERICAN ASSOCIATION OF NURSERYMEN, SPECIAL MEETING, January 12, 1948.

NATIONAL LANDSCAPE NURSERYMEN'S ASSOCIATION, WINTER MEETING, January 12, 1948.

ILLINOIS STATE NURSERYMEN'S ASSOCIATION, ANNUAL CONVENTION, January 13-14-15, 1948.

ILLINOIS STATE NURSERYMEN'S ASSN.

LOW COST FOR NEW CONSTRUCTION, OR FOR REPLACEMENT OF YOUR WORN OUT LATH OR SLAT HOUSES...

HEAVY STEEL WIRE NETTING

16 Gauge steel wire 2" x 6" mesh, garnished with steel wool and enameled in mixed colors: dark green, sand, earth brown, olive drab. Each roll is 75 feet long by 6 feet wide containing 450 square feet.

Every roll is brand new and well wrapped in water proof paper.



AVAILABLE FOR IMMEDIATE DELIVERY IN CAR LOTS

(400 to 420 rolls per car)

WE WILL GLADLY ACCEPT YOUR ORDERS FOR SMALLER QUANTITIES TO SUIT YOUR REQUIREMENTS IN LOTS FROM FIVE ROLLS UP.

Write for Prices and Place Your Orders Quickly

THE SUPPLY WILL SOON BE EXHAUSTED

H. M. OWEN

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COLUMBUS, MISS.

E. A. FARLEY

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NEW ORLEANS, LA.

ana Association of Nurserymen, which will be held at the university January 7 to 9. Accommodations at the Union building have been reserved for 100 members, and those planning to attend are advised to send in their reservations without delay.

Emphasis at the convention discussions will be placed on plans and methods for delivering the stock produced to the buyer which will insure the greatest amount of customer satisfaction.

All nurserymen and members of allied businesses who expect to exhibit during the meeting should contact the secretary, Mrs. Mary L. Stum, Route 18, Box 188, Indianapolis 44, Ind.

TENNESSEE ASSOCIATION PLANS SHORT COURSE.

Anticipating a larger attendance than ever before, the Tennessee State Nurserymen's Association will hold its annual meeting January 22 and 23 at the Hotel Andrew Johnson, Knoxville.

The meeting will be held at the hotel January 22, while January 23 members will go out to the University of Tennessee farm, where the department of horticulture will present

General Line of Ornamentals
Specializing in Specimen Evergreens,
Liners—Both Deciduous and Evergreen,
Red-leaved Barberry in surplus quantities.
Catalog on request.

FAIRVIEW EVERGREEN NURSERIES

Fairview, Pennsylvania

ACER PLATANOIDES-NORWAY MAPLES

Look!	Look!
6 to 12 in.	Per 100 \$ 5.00
12 to 18 in.	6.00
3 to 4 ft., trans.	13.50
4 to 5 ft., trans.	15.00
5 to 6 ft., trans.	20.00
6 to 8 ft., trans.	30.00
6 to 8 ft., 1 to 1 1/2-in. cal.	60.00
12 to 12 ft., 1 to 1 1/2-in. cal.	75.00
12 to 14 ft., 1 1/2 to 1 1/2-in. cal., well branched	150.00
14 to 16 ft., 1 1/2 to 1 1/2-in. cal., well branched	200.00
16 to 18 ft., 1 1/2 to 2-in. cal., well branched	225.00
2 to 2 1/2-in. cal.	\$3.00 each

Additional charge of 10% will be added for baling and shipping. No charge will be made for loading bulk trucks. When C.O.D. shipment is desired, a cash deposit of 25% must accompany order.

STATE ROAD NURSERY
State and Sprout Rds.
Route 1, Media, Pa.

CALIFORNIA PRIVET

Sizes, 12 ins. to 4 ft.
Splendid Stock.

ASBURY PARK HOME, NURSERY
Cortlandt St. Neptune, N. J.

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EVERGREEN TREE SEEDLINGS FOR SPRING SHIPMENT

Evergreen tree seed is again becoming more readily available. We can now offer to the trade the following varieties in quantity lots:

MUGHO PINE

2-yr., 2 to 4 inches. Per 1000 \$25.00

BLACK HILL SPRUCE

3-yr., 3 to 6 inches. Per 1000 \$15.00

Our terms are 50% with the order, shipment C.O.D. for balance of order.

WESTERN MAINE FOREST NURSERY CO.
Dept. AN-117 Fryeburg, Maine

Trees, Evergreens, Shrubs Fruit Trees

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KELLY BROS.

offer for fall and spring shipment.

Apple
Pear
Sweet and Sour Cherry
Plum
Quince

All above, 1 and 2-year.

Peach and Apricot, 1-yr.

Chinese Elm, transplants,
6 to 8 and 8 to 10 ft.

Norway Maple, 6 to 8 and
8 to 10 ft.

Lombardy Poplar, 2-yr.,
6 to 8, 8 to 10, 10 to 12 ft.

Black Walnut, 3 to 4 and
4 to 5 ft.

Spiraea Vanhouttei, 18
to 24 ins., 2 to 3 ft. and
3 to 4 ft.

KELLY BROS. NURSERIES, INC.

Dansville, N. Y.

EVERGREEN TRANSPLANTS FOR IMMEDIATE DELIVERY

	Per 100
Globe Arborvitae, 4 to 6 ins., X...	\$16.50
Tom Thumb Arborvitae, 4 to 6 ins., X.....	16.50
Retinospora Plumosa, 4 to 6 ins., X.....	16.50
Retinospora Plumosa, 6 to 8 ins., X.....	20.00
Retinospora Plumosa Obtusa, R.C.	8.00
Globe Arborvitae, R.C.....	8.00
Irish Juniper, 6 to 7 ins., X.....	16.50
Pfitzer Juniper, 4 to 6 ins., X.....	18.00
Taxus Cupidata, 4 to 6 ins., X.....	16.50
Taxus Hicksii, 4 to 6 ins., X.....	20.00
Taxus, Jeffrey's Yew, 4 to 6 ins., X	20.00

ESHAM'S NURSERIES
Frankford, Delaware

TAXUS in variety

2-year bed-grown, 6 to 9 ins.
Ready Fall 1947—Spring 1948.
\$25.00 per 100; \$225.00 per 1000.

LILACS, French Hybrids

Best single and double varieties.
Ready Fall 1947—Spring 1948.
\$25.00 per 100; \$225.00 per 1000.

DEERFIELD NURSERIES

Deerfield Street P. O., N. J.

a one-day short course on subjects of interest to nurserymen. A tour of the grounds will be conducted.

MINNESOTA PROGRAM NEARS COMPLETION.

The program is nearly complete for the convention of the Minnesota State Nurserymen's Association, which will be held December 1 and 2 at the Lowry hotel, St. Paul.

Among the guests who will be present are R. P. White, secretary of the American Association of Nurserymen; George Grimm, columnist for the Minneapolis Star Journal newspaper, who has traveled around the world during the past two years; A. D. Slavin, chief of the nursery division of the soil conservation service, United States Department of Agriculture, Milwaukee, Wis.; Dr. O. B. Jesness, economist, University of Minnesota, and Prof. W. H. Alderman, chief of the division of horticulture, University of Minnesota.

An outstanding floor show, as well as a banquet, is planned, and Carl Jackson, superintendent of the state school for boys, will be the speaker.

WISCONSIN PROGRAM INCLUDES A. A. N. PLANS.

An address by President Edward Eschrich, Milwaukee, will open the program of the thirty-first annual convention of the Wisconsin Nurserymen's Association, to be held December 3 and 4 at the Schroeder hotel, Milwaukee. Other events scheduled for the first session include the secretary-treasurer's report, presented by Thomas S. Pinney, Sturgeon Bay, the appointment of an auditing and nominating committee and the discussion of new and old business.

At the luncheon, which will be served in the hotel clubrooms, Alvin Monroe, of the Milwaukee chamber of commerce, will speak on the American Association of Nurserymen convention to be held next July at Milwaukee.

Highlights of the afternoon's program will be a talk on "Soil Erosion" by A. D. Slavin, of the United States soil conservation service; reports by E. L. Chambers, state entomologist, and staff, and a discussion and open forum.

Evening festivities will include a banquet with entertainment in the Pere Marquette room of the Schroeder hotel.

Richard P. White, executive secretary of the A. A. N., will speak on "Wisconsin Nurserymen as Hosts to the A. A. N. 1948 Convention," and L. L. Kumlien, Janesville, will talk

Northern-grown Lining-out Stock

	Per 100	Per 1000
Aronia melanocarpa, 1 to 2 ft.....	\$5.00	\$45.00
Betula papyrifera, 1 to 2 ft.	6.00	50.00
Clethra alnifolia, 1 to 2 ft.	5.00	45.00
Fagus grandifolia, 6 to 12 ins.....	5.00	40.00
Ilex verticillata, 1 to 2 ft...	5.00	40.00
Prunus virginiana, 1 to 2 ft.	6.00	50.00
Rhus typhina, 6 to 12 ins...	4.00	30.00
Syringa vulgaris, 1 to 2 ft...	6.00	50.00
Viburnum cassinoides, 1 to 2 ft.....	6.00	50.00
Viburnum dentatum, 1 to 2 ft.....	6.00	50.00
Viburnum lentago, 1 to 2 ft.	6.00	50.00

EVERGREENS

Abies balsamea 4 to 8-inch seedlings....	5.00	30.00
8 to 12-inch seedlings....	8.00	60.00
Juniperus virginiana 4 to 8-inch seedlings....	5.00	40.00
8 to 12-inch seedlings....	10.00	80.00
Tsuga canadensis 4 to 8-inch seedlings....	4.00	25.00
8 to 12-inch seedlings....	5.00	40.00

The above stock is first quality collected lining-out stock.

HEMLOCK TRANSPLANTS

Tsuga canadensis 6 to 8 ins., 1-yr. transplants	15.00	120.00
6 to 8 ins., 2-yr. transplants	18.00	150.00
8 to 12 ins., 1-yr. transplants	18.00	150.00
8 to 12 ins., 2-yr. transplants	20.00	180.00

Send for complete list of Hardy Native Ferns, Lilies, Orchids, Wild Flowers, Trees, Shrubs and Evergreens.

ISAAC LANGLEY WILLIAMS

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Exeter, N. H.

EVERGREEN LINERS

Taxus Capitata, Cuspidata, Hatfieldi and Hicksi.

Hemlock and Colorado Spruce.

Colorado and Norway Spruce, B&B,
1 1/2 to 4 ft.

Ask for our latest price list.

BROOKFIELD GARDENS

Delaware, N. J.

EVERGREENS

From liners to specimens.

Our Specialty

We grow a quality line of Yews, Hemlocks and Junipers.

Get to know LEGHORN'S for your QUALITY EVERGREENS.

LEGHORN'S EVERGREEN NURSERIES

Geer Street,

Cromwell, Conn.

SCARFF'S Nursery Berry Plants



**RASPBERRIES — BLUEBERRIES — BOYSEN-
BERRIES — BLACKBERRIES — CURRANTS**

GARDEN ROOTS

**Send for our complete Trade List.
ORNAMENTAL SHRUBS and EVERGREENS**

Here are a few specials:

	Per 100	Per 1000
Buddleia Charming, 2 to 3 ft.	\$20.00	\$180.00
Forsythia Spectabilis and Suspensa, 3 to 4 ft.	25.00	200.00
Hamamelis Vernalis (Witch Hazel), 3 to 4 ft.	35.00	300.00
Lonicera Tat. Rubra, 3 to 4 ft.	30.00	250.00
Lonicera Zabeli (red), 3 to 4 ft.	35.00	300.00
Ligustrum Ibolium, 2 to 3 ft.	12.50	100.00
Ligustrum Ibolium, 3 to 4 ft.	15.00	125.00

(Glossy foliage. Hardier than California.)

EVERGREENS

ARBORVITAE—Pyramids,
Wareana, Dark Green
American, Woodward
Globe.

BIOTA—Berckmans Golden

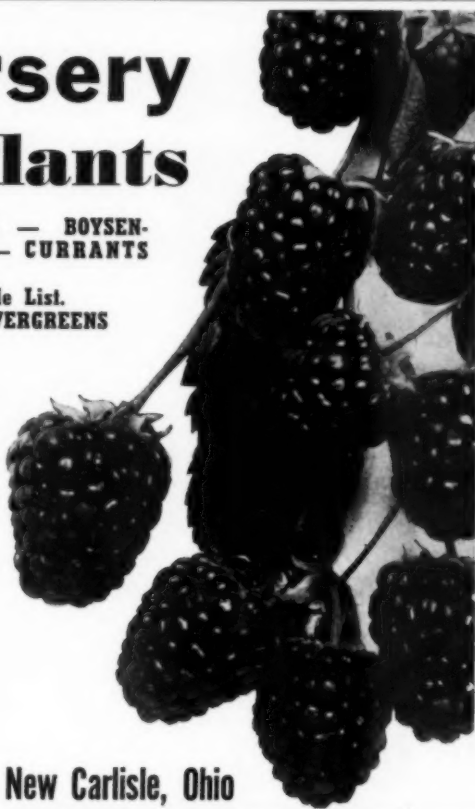
JUNIPER—Irish, Swedish
By car or truck lots.

LIVING CHRISTMAS TREES

NORWAY SPRUCE, 3 to 6
ft., well grown, good color.
Drive over to our nursery,
or write for prices. Will
sell any quantity or entire
blocks.

W. N. SCARFF'S SONS

New Carlisle, Ohio



on "Wisconsin Nurserymen," at the Friday morning session. The afternoon program will include the presentation of recent research developments in horticulture by a staff member of the college of agriculture and a talk on "State Nursery Associations" by Harold E. Hunziker, secretary of the National Landscape Nurserymen's Association.

A meeting of the Wisconsin chapter of the A. A. N. is scheduled for midafternoon.

ILLINOIS PROGRAM.

The program for the opening session of the Illinois State Nurserymen's Association convention, to be held January 13 to 15 at the Hotel La Salle, Chicago, will be devoted to the trade promotion program of the American Association of Nurserymen. Speakers will include the A. A. N. president, J. Awdry Armstrong, and the secretary, R. P. White.

Wednesday, January 14, a luncheon at 12:15 p. m. will open the meeting. Speakers for the afternoon program are Dr. George D. Scarseth, director of research, American Farm Research Association, whose subject will be "A Living Soil for Better Plants"; Dr. F. L. O'Rourke, assistant

READY FOR IMMEDIATE DELIVERY

Liners well established in pots.

	Each
2500 <i>Gardenia fortunei</i> , 2 1/2-in. pots, 6 to 12 ins.	\$0.10
10,000 <i>Irish Juniper</i> , 2 1/2-in. pots, 6 to 10 ins.	.15
2000 <i>Loropetalum</i> (Flowering Evergreen—low-growing), 2 1/2-in. pots, 8 to 12 ins.	.15
8000 <i>Magnolia grandiflora</i> , 2 1/2-in. pots, 4 to 6 ins.	.15
4000 <i>Pittosporum tobira</i> , 2 1/2-in. pots, 8 ins. and up.	.15

All grade-A material; outdoor, not greenhouse, grown. Absolutely hardy and ready for field.

A good liner makes a good finished plant.

Other items will be available for spring shipment. Write for complete list.

VERHALEN NURSERY CO.
SCOTTSVILLE, TEX.

ALTHEA

	Per 10	Per 100	Per 1000
12 to 18 inches.	\$1.50	\$12.00	\$100.00
18 to 24 inches.	2.10	18.00	150.00
2 to 3 feet	2.90	25.00	225.00
3 to 4 feet	4.00	35.00	.....

Varieties

Anemonae-flora, double pink **Banner**, double white, red center
Boule de Feu, double purplish-red **Lucy**, double red
Totus Albus, single white.

Write for special prices on quantity lots.

LAKE'S SHENANDOAH NURSERIES
Shenandoah, Iowa

1870

1947



Healthy, 1-year seedlings of Washington Hawthorn — *Crat. cordata* (*phaenopyrum*). Outstanding features are the brilliant fall color and the bright red berries which last all winter. Fine for 6-foot trimmed hedge or 20-foot specimens, also windbreaks. We used them successfully for budding Paul's Scarlet Hawthorn. Very hardy, easily transplanted.

12 to 18-inch seedlings, \$12.00 per 100, \$85.00 per 1000.

Shipment now or next spring.

NEWPORT NURSERY CO.
Newport, Mich.

KOSTER NURSERY

Division of Seabrook Farms

Wholesale Nurserymen

BRIDGETON, N. J.

Write for wholesale price list of lining-out and specimen stock in better evergreens and shrubs.

Evergreens
Barberry
Privet

Write for wholesale price list.

GARDNER'S NURSERIES
Rocky Hill, Conn.

NORTHERN COLLECTED EVERGREENS
FERNS
PLANTS
SHRUBS
WILLIAM CROSBY HORSFORD
Charlotte, Vermont

professor of horticulture and coordinator of nursery and landscape management, Michigan State College, East Lansing, who will discuss the training of nursery personnel, and a member of the research department of the Sherwin-Williams Co., who will report on the use of the newer insecticides in nursery and ornamental plantings. A motion picture showing the newest developments in spraying equipment is tentatively scheduled to conclude the Wednesday afternoon meeting.

Plans are now under way for the banquet and floor show, which is scheduled for Wednesday evening in the ballroom of the hotel. Following the floor show, John Nash Ott, Jr., will show his interesting motion picture, "Flowers in Action," which reveals the actual development of plants through lapse-time photography.

The annual business meeting of the Illinois association will take place Thursday morning, January 15, while the regular convention session on that day will be opened with a luncheon at 12:15. Dr. William Dern, Newport, Ky., will be the guest speaker. Immediately following the luncheon, the annual meeting of the Illinois chapter of the American Association of Nurserymen will be held.

NEW YORK MEETING INCLUDES THREE GROUPS.

A committee representing the New York State Nurserymen's Association, the National Landscape Nurserymen's Association and region 1 of the American Association of Nurserymen met October 29 at the Hotel Pennsylvania, New York city, to plan for the convention of the New York State Nurserymen's Association, which will be held January 5 and 6 at the Hotel Pennsylvania.

A meeting of the directors of the New York State Nurserymen's Association at 3 p. m. January 4 will open the convention. Registration will begin at 8:30 a. m. January 5, and the annual meeting of the New York association will be called to order at 10 a. m. Plans for the afternoon program include a presentation of the Verne Burnett organization's publicity project and a discussion of the mechanization of nursery and landscaping operations. Paul Stark will talk on "Freedom Gardens."

The National Landscape Nurserymen's Association will meet January 6 at 10 a. m., and E. B. Stedman will address the group on the subject of "Cost Accounting."

After the luncheon recess, there will be a meeting of region 1 of the

AMERICAN NURSERYMAN

LANDSCAPE MATERIAL

	Each
Austrian Pine, 8 to 10 ft.....	\$35.00
Himalayan Pine, 8 to 10 ft.....	25.00
Colorado Spruce, 10 to 12 ft.....	40.00
White Spruce, 6 to 7 ft.....	15.00
Black Hills Spruce, 7 to 8 ft.....	25.00
Colorado Blue Spruce, 10 to 12 ft.	75.00

Above Trees dug with
600 to 800-lb. laced ball,
and F.O.B. your truck.

Redbud, 6 to 8 ft., B&B.....	4.00
Washington Thorn, 7 to 9 ft., B&B	6.00
White Dogwood, 6 to 8 ft., B&B..	7.50
White Dogwood, 8 to 10 ft., B&B.	12.50

Shade Trees in variety, up to 5 inches.

GEORGE F. BLOOMER
193 Main St.
Flemington, N. J.

ORNAMENTAL EVERGREENS

Trees & Shrubs

BAGATELLE NURSERY
P. O. Huntington Station, N. Y.

EVERGREEN CUTTING WOOD

We can now offer *Taxus Capitata* tip cutting wood and other varieties of *Yews* and assorted *Evergreens* in limited quantities for November and December delivery. Write for prices.

**LEGHORN'S EVERGREEN
NURSERIES**

Geer St. Cromwell, Conn.

LINING-OUT BERBERIS THUNBERGI

Grade	1-year seedlings	Per 1000	Per 10,000
3 to 6 ins.....	\$15.00	\$135.00	
6 to 9 ins.....	20.00	180.00	
9 to 12 ins.....	25.00	225.00	

WILSON'S NURSERIES
Manchester, Conn.

CHINESE CHESTNUT TREES
Blight-resistant.
TREES—TRANSPLANTS—LINERS
THE GOLD CHESTNUT NURSERY
Cowen, W. Va.

A. A. N., at which A. A. N. President J. A. Armstrong is expected to be present. A proposal for reappointing A. A. N. chapter representatives will be considered. Dr. E. E. Naylor, of the New York Botanical Garden, will show a Technicolor film.

Social events which have been planned include a cocktail party, Sunday evening, January 4, and a complimentary breakfast January 6.

Rooms have been set aside at the hotel, and members should make their reservations before December 25, which is the last day the rooms will be held.

Members of the committee on arrangements are Howard C. Taylor, Valteau C. Curtis, Art Landseadell, Walter Scherer, Clifton Sammis, Charles R. Mouquin and P. J. van Melle for the New York State Nurserymen's Association; Charles Boardman and J. Franklyn Styer for the N. L. N. A., and C. Russell Jacobus and Louis Vanderbrook for region 1 of the A. A. N.

ALABAMA CONFERENCE ON RADIOACTIVE MATERIALS.

A nation-wide conference on the use of radioactive isotopes in agricultural research will be held December 18 to 20 at the Alabama Polytechnic Institute, Auburn, Ala., in cooperation with the Oak Ridge Institute of Nuclear Studies.

The 3-day meeting, which will include lectures by some of the country's foremost investigators in the field, will be the first to be held in the world on the application of radioactive materials to agricultural research.

The first day of the conference will be concerned with fundamentals. The second day will be devoted to the use of radioactive materials in plant physiology, soils and horticultural research and will include laboratory demonstrations of typical tracer experiments. Lecturers in these phases include Dr. S. B. Hendricks, of the United States Department of Agriculture, bureau of plant industry, soils and agricultural engineering, Beltsville, Md.; Dr. Orlin Biddulph, State College of Washington, Pullman; Dr. M. D. Thomas, agricultural research chemist, American Smelting & Refining Co., Salt Lake City, Utah; Dr. B. F. Jones, Connecticut agricultural experiment station, Storrs, and Dr. Ralph T. Overman, chemistry division, Clinton National Laboratory, Oak Ridge, Tenn.

The conference will be concluded with lectures on the use of radioactive materials in nutrition and animal husbandry fields.

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This Business of Ours

Reflections on the Progress and Problems of Nurserymen

By E. Sam Hemming

LANDSCAPE ARCHITECTS.

In the report of the eighth annual meeting of the National Landscape Nurserymen's Association, at Boston, there was a comment made that should, in the long run, portend a considerable change in attitude toward nursery-employed landscape architects.

After the talk on "Training Landscape Students," by Walter L. Chambers, assistant professor in the school of design at Harvard University, Mr. Chambers was apparently asked if it made any difference whether the landscape job was done by a landscape architect, working professionally or as a landscape nurseryman, provided the client got the "most for his money." Mr. Chambers answered to the effect that he thought the way the charges were made had little to do with the ethical or unethical side of the business.

Such a thought is quite a change from the rigid code of ethics of the American Society of Landscape Architects, a code that, because of the nature of the profession, its small stature and the income tax laws, was founded upon false premises. The ethics were, of course, based upon or patterned after those of the American Institute of Architects and the American Society of Civil Engineers, to both of which the code was eminently adaptable. But in the case of both the architects and the civil engineers the size of the jobs is usually large enough to make the fee system and the code easily workable. In the case of the landscape architects, the number of private jobs that today run over \$10,000 (the fee from which is small) is so small as to be negligible compared even to engineering jobs of \$1,000,000 or more. This leaves the professional landscape architect today almost completely dependent upon the fields of city planning, park superintendency, professional education and the few lonely top-notch estate planners.

The unfortunate part of all this is that it leaves many of the graduates of our fine landscape schools, men and women who often have master's degrees and have undoubted artistic ability, orphans without professional standing. This is wrong and illogical and does harm in many ways. The practitioner is without close ties to his fellow practitioner; it must make

him lose some of his self-respect and feel in some way as though he was some sort of quack, and it cannot but reflect upon his service to his clients if he must be half-apologetic.

Nurserymen who are landscape architects or who hire landscape architects, too, have this silly guilt. They invariably represent themselves euphemistically as landscapers, landscape designers, contractors, engineers, ad infinitum. It is true that in the past generations a nurseryman took up landscaping with no knowledge of its principles, but today his son usually has a B.S. or B.A. more often in landscape architecture than even in horticulture. It also can be pointed out that some of the top-notch members of the A. S. L. A. are men who learned all they know by practical experience.

I might point out here that a member of our family is chief chemist for one of the country's large industrial corporations, which enhances rather than removes his professional standing in the eyes of the American Chemical Society. Chemistry by its nature requires a highly specialized advanced education, yet is useful to society only through commercial adaption.

Mr. Chambers in his talk stated that the great middle class of Amer-

ica are the "forgotten men" as far as recipients of artistic landscape services go. Yet this big class of people can only be really well and adequately served by professionally trained landscape men employed by nurseries (unless they are employed by the state, which heaven forbid). But is this great American middle class going to get this artistic service anywhere near as fast as it should with this present lack of professional status? In fact, I often wonder how the colleges get as many students as they do.

The relatively youthful National Landscape Nurserymen's Association has been a step in the right direction, but by its very nature is an euphemism and again side-steps the issue. The real solution can only be the establishment of professional standing of accredited practitioners of the art. How it can be brought about I am not sure, because solution will not be easy. Because the income tax has made one set of ethics impracticable, it does not mean that any new organization can do without a very strict code. Only strictly honest service performed with skill and pride can suffice. In addition, the country's past has been checkered with misbegotten associations and societies founded on pique, which is no solution at all.

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Perhaps the first and best step would be to form a group within the N. L. N. A. and with the assistance of our landscape schools set up standards for accrediting members.

WEEDLESS BLUEGRASS.

A special use of 2,4-D is in weeding fields of bluegrass that are to be harvested for seeds, according to the United States Department of Agriculture.

Applied either as a spray or mixed with fertilizers, 2,4-D has killed practically all the weeds in plots of bluegrass. When seeds from such a plot are harvested, they can be marketed without the rigorous cleaning process that is needed for seeds from a plot that is even moderately weedy, Paul C. Marth, of the bureau of plant industry, reports. The grower who does not get rid of weeds before harvesting bluegrass seeds may lose up to forty per cent of his harvest in the cleaning process.

There may be a chance of some harm to the germination of the seeds if 2,4-D is applied at certain stages of spring growth, but when 2,4-D is used in the fall as a weed-killer, experiments conducted cooperatively with V. K. and E. H. Toole, at the Beltsville research center, indicate it caused no harm to the seed crop harvested the following year.

In recent years the supply of Kentucky bluegrass has usually been less than has been needed. The 2,4-D treatment promises to improve the purity without affecting the quality of the bluegrass seeds on the market.

HAVE YOU HILL CATALOGS?

Making a practice of binding copies of all the firm's wholesale catalogs, the D. Hill Nursery Co., Dundee, Ill., in preparing to bind a series, finds copies missing of its wholesale catalogs 37 and 38.

Perhaps some customer of the D. Hill Nursery Co. has copies of these two catalogs which he will be willing to part with, suggests the sales manager, William J. Smart. If so, please write to Bill.

THE florists', landscape and decorating firm of Woodrow, Inc., formerly located at 864 Sixth avenue, New York city, has opened an attractive new flower and garden shop at 1615 Second avenue, just below Eighty-fourth street. Drew Swanson, business manager, and Kenneth Zimmerman, horticultural expert, are in charge of the shop in the absence of Mr. Woodrow, who is taking a six months' leave because of ill health.

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Our 2-year Field-Grown roses, budded on Japonica Multiflora, are the finest we have ever had to offer.

Deliveries begin in December, 1947, and continue to early Spring.

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1 to 100.....	55c	45c	35c
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OBITUARY

Luther Adams Breck.

Luther Adams Breck, 58, president
and treasurer of Joseph Breck & Sons
Corp., Boston, Mass., died October
21 at his home at Bryantville, Mass.

Born at Newton, Mass., Mr. Breck
attended the Newton schools and the
Volkman school and was graduated
from Harvard University in 1912.
Following his graduation from col-
lege, he joined the Breck Seed Co., a
subsidiary of the corporation, and
was sent to Europe to make an ex-
tensive study of the seed, bulb and
nursery industry there.

Mr. Breck became president of the
Breck corporation in 1921 upon the
retirement of his father, and was the
fourth generation of his family to
head the firm. He was a member of
the Massachusetts Horticultural So-
ciety and was active in a number of
seedsmen's and nurserymen's organi-
zations.

Surviving are his widow, Mrs.
Marguerite Reeves Jones Breck; a
son, Luther Adams Breck, Jr.; his
mother, Mrs. Charles H. Breck; a
sister, Mrs. John Benbow, Montclair,
N. J.; a brother, Charles H. Breck,
Jr., Hollywood, Cal., and two grand-
children.

Fred V. Lynch.

Fred V. Lynch, 51, owner of the
Rhinebeck Nursery & Landscape
Service, Rhinebeck, N. Y., died Octo-
ber 24 at his home at Rhinebeck.

A veteran of World War I, Mr.
Lynch was a member of the Elks'
Club and the American Legion, and
his firm belonged to the American
Association of Nurserymen and the
New York Nurserymen's Association.

Surviving are his widow, Mrs.
Ruth Lynch; a daughter, Jane, and a
brother, John F. Lynch.

Meyer Aronowitz.

Meyer Aronowitz, 63, owner of
the Barclay Plant & Flower Market,
New York city, died October 21 at
his home at Brooklyn, N. Y. Mr.
Aronowitz had been in the nursery
business for forty years prior to his
retirement two years ago. A native
of New York, he was a graduate of
City College.

He was a member of the Com-
posite lodge 819, A. F. & A. M.,
and of the Mecca temple. Surviving
are his widow, Mrs. Fannie Arono-
witz; a son, George; a sister, Mrs.
Anna Goldberg, and three grandchil-
dren.

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REPORT TESTS ON RABBIT REPELLENTS.

Orchard damage by cottontail rabbits is a problem of long standing, since the buds, shoots and bark of small deciduous trees normally form a portion of the animals' winter diet. Such damage to young orchard trees and shrubs can be controlled, but each locality presents a different situation, according to H. A. Cardinell and D. W. Hayne, research scientists in the departments of horticulture and biology at Michigan State College, who have completed tests of over 120 repellent mixtures to determine what will best protect the trees.

A report of their experiments appeared in the Michigan agricultural experiment station's quarterly bulletin in an article entitled, "Pen Tests of Rabbit Repellents." Because of the impracticability of field tests, the trials were made only in pens, which were especially useful when a number of possible repellents were to be screened to select the few most useful formulas.

Experiments were conducted on rabbits enclosed in large pens and later in small pens containing one rabbit each, which were supplied with similar lots of treated materials. The individual pen tests also furnished information about differences among individual rabbits in food preferences.

Materials tested were painted onto the bark of shoots freshly cut from apple trees, and after a few hours' drying period, they were exposed to the rabbits. The shoots for one experiment were cut from the same tree, wherever possible, and were restricted in diameter to a range of between three-eighths and three-quarters of an inch. Apple shoots smaller than three-eighths of an inch in diameter were often cut off cleanly by the rabbits, while branches larger than three-quarters of an inch were somewhat less attacked, even though untreated. Each pen was provided with several shoots covered with each mixture, as well as with similar untreated sticks of apple wood and other species. As many as twenty treatments were tested at one time.

As a check standard, each pen was provided with shoots treated with the approved solution of rosin and ethyl alcohol in all of the experiments, and untreated sour cherry shoots, which cottontails dislike, in most of the tests.

Results of Tests.

The repellent mixtures tested were classified into three groups according to the results of the trials. Included in group 1 was any repellent as ef-

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Frau Karl Druschki, H. P.
Francis Scott Key
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Golden Dawn
Grass an Teplitz
K. A. Viktoria
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Paul Neyron, H. P.
Pink Radiance
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4000	4 to 6 inches	35.00
3000	6 to 12 inches	45.00
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		CORNUS FLORIDA	
8000	6 to 12 inches	12.50
5000	12 to 18 inches	17.50
4000	18 to 24 inches	25.00
1000	2 to 3 feet	40.00

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		Red Cedar	
8000	4 to 6 inches	12.50
5000	6 to 12 inches	20.00
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ORNAMENTAL SHRUBS
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FOREST TREE SEEDLINGS
LINING-OUT STOCKS

fective as the rosin and ethyl alcohol formula, mixed two parts of rosin to one part of alcohol by weight. Group 1 contains only those mixtures considered to be very good. To be included in group 2, considered as "fair," or promising for use under less than extreme conditions, a mixture had to be as effective as the rosin and ethyl alcohol formula when prepared with one part of rosin to two parts of ethyl alcohol by weight.

Group 3, containing the remainder of the tester materials, includes the third dilution of the rosin and ethyl alcohol formula, one part of rosin to eight parts of ethyl alcohol by weight. This third classification includes a number of mixtures considered as of appreciable effectiveness, but useful in the field only under favorable conditions, and also includes a number of mixtures of less effectiveness.

The individual taste preference of rabbits, which was revealed by the tests, prevents a definite statement of the value of any particular mixture, but it may help to explain why there are differences in the effectiveness of various mixtures in different regions. Disagreement among field reports of the effectiveness of repellent mixtures may result partly from local differences in rabbits' food preferences and from differences in the severity of test conditions.

A rabbit in the wild state seems to choose a diet according to its own food preferences and according to the plants available to it. Since the individual rabbits as well as the food plants available to them change from farm to farm, each farm and orchard is a separate situation with a variety of plant food normally available. The amount of food available to rabbits may vary with weather conditions, especially in winter when some plants are covered by snow and temporarily removed as available food, while other plants are brought within a rabbit's reach by a higher snow level. Small nursery stock, always near the top of the rabbit's list of preferences, may suddenly become the chief available food and at such times damage may be disastrous. Thus, the success of a repellent does not depend entirely on the mixture used.

In comparison to the best mixtures, as revealed by the tests, either blood, lard or manure, which have long been recommended, had so small an effect that it was negligible from the practical point of view. However, in a field condition which supplied an abundance of wild food, the slight protection furnished by these materials might be sufficient to make the treated young trees undesirable

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(*Tsuga Canadensis*)

	Each		Each
2 1/2 to 3 ft.	\$3.00	5 to 6 ft.	\$ 6.50
3 1/2 to 4 ft.	4.00	6 to 7 ft.	8.00
4 1/2 to 5 ft.	5.00	7 to 8 ft.	10.00

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Line-outs	4.50	35.00
<i>Juniperus virginiana</i> .		
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Line-outs	2.50	20.00
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5 to 7 feet	35.00	300.00
2 to 3 feet	10.00	75.00
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Line-outs	2.00	15.00
<i>Ilex privet</i> , hv., 12 to 18 ins., br.	4.00	35.00
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35c, packing at cost.

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60,000 to 75,000 **Hall's Japanese Honeysuckle**, No. 1, transplanted. Also any amounts up to 100,000 of **Hall's Japanese Honeysuckle** liners. Also 12 to 24-in. lining-out seedlings. **Redbud**, **Dogwood**, **Sugar Maple**, **American Birch**, **Papaw**, **Sweet Gum**, **Basswood**, **Magnolia acuminata**, **Moss Locust**, **American Holly**, 6 to 12 and 12 to 18 ins. **Hemlock** and **Red Cedar** seedlings. **Azalea**, **Red Flame**, **Pink** and **White** clumps. **Sugar Maple**, **Scarlet Maple**, **Green Ash**, **Sweet Gum**, **Tulip Poplar**, **Redbud**, **Dogwood**, 5 to 6 ft. 100 lbs. new-crop **Rhus aromatica**, 35c per lb. **White Fringe Tree** seeds, **Magnolia acuminata**, **Butternuts** and **Shellbark Hickory Nuts**.

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Wholesale to Nurserymen.

45 years in business.

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Growers of Quality Evergreens
Lining-out Stock a Specialty
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EVERGREEN NURSERY CO.
Established 1864 • STURGEON BAY, WIS.



Wholesale growers of the best
Ornamental Evergreens,
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CHRISTMAS TREES

Several thousand select **Norway Spruce** which we will cut this season.

These trees are cultivated, nursery-grown. They are well spaced in the nursery row and are sheared.

Quantity Prices, F.O.B. Nursery
Each
4 to 5 ft. **\$1.25**
5 to 7 ft. **1.50**

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New—Fragrant—Hardy
Pinkish-white flowers in May

Heavy pot-grown stock for lining out. Spring 1948 delivery.

Per 100 Per 1000
2½-in. pots **\$35.00 \$300.00**
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No charge for packing if check accompanies order.

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WHOLESALE ROSE GROWERS for over 30 years.

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Taxus in variety, R.C., tr. and pots.
Weigela, Eva Rathke, 2-yr. frame tr.
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Contracting now for future delivery.
Correspondence invited. No catalog.

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AZALEAS—CAMELLIAS and GARDENIAS

See price list in Classified Ads.
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NATIONAL NURSERIES, Biloxi, Miss.

enough to prevent the rabbits' feeding.

When selecting a material for field use, the most extreme conditions likely to be encountered must be considered. While a less effective repellent may do for several years, it may fail when it is most needed. Group 1 contained only materials showing an ability to protect under severe conditions. Some mixtures in group 2 may be practicable under more favorable conditions.

Limited tests of a few of the more protective repellents were made to determine their effect on growing young fruit trees, and they are annotated in the list. However, none of the other formulas listed have been tested for safeness on living bark. Some are known to be dangerous on young fruit trees, and any trials of repellents untested against trees should be made with the greatest caution.

Formulas tested in group 1 included: Rosin, three parts, and ethyl alcohol, two parts, a repellent used in all tests of effect upon trees and showing no deleterious effect in any of the experiments carried out; rosin, five parts, and linseed oil, one part, one of Neilson's recommended formulas, which proved, when tested on growing trees, to confirm the previous observations that damage will result from its use, although there is no doubt that this is an effective rabbit repellent, for in one test this material, after six months' weathering on the trunks of small trees, was as effective as fresh treatments of certain other repellents included in group 1, showing a lasting quality unmatched by any of the other materials in this particular test; Burt gum, manufactured by the National Adhesive Corp., Chicago, Ill., which gave evidence of damage to young trees in several tests, and Castle chemical rodent repellent, manufactured by the Castle Chemical Co., Castle Rock, Minn., which produced no damage on growing trees according to the measurements used.

RUSSEL M. SINCK has recently opened Sinck's Landscape Service, 104 South Maple avenue, Eaton, O.

EDWIN C. HUNKEL, president of the Holton & Hunkel Co., Milwaukee, Wis., was at the St. Paul, Minn., stockyards October 13 to purchase feeder beef cattle for the Rose Dale Farms division of the firm, which is also installing a large new refrigerator, cooled with Lippman equipment with new-type blowers, to replace the usual fin coils.

The COTTAGE GARDENS

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- **PEONIES**
Herbaceous and Tree
- **EVERGREENS**
For immediate landscape use.
- **TAXUS**—a specialty.
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2 to 3 ft., xxx

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PYRACANTHA coccinea lalandi

From cuttings taken last fall, rooted over winter in greenhouse, transplanted to the field last spring and grown all summer in open without shade. Stock from ONE ORIGINAL, CHOICE, HEAVILY BERRIED PLANT that survived the severe November freeze of 1946 and withstood 27 degrees below zero last winter. Strong well furnished plants, 9 to 12 inches. Bare root only. Ideal to pot in No. 6 Cloverset Pots which, if forced in greenhouse over winter, will make 12 to 18-inch plants by spring. 50¢ each; \$45.00 per 100. Immediate shipment.

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Small Fruit Specialists.

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JUNIPERUS PFITZERIANA

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These plants have unusually good roots.

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25,000

Peach trees in leading varieties.

20,000

1 and 2-year-old Apple in leading varieties.

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A general line of Shade Trees, Evergreens and Shrubs. We are still booking orders for Apple and Pear grafts for Spring shipment.

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Nursery and Landscape Co.

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2-yr. Apple Trees, 15c and up. 1-yr. Peach, 15c and up. Transplanted Chinese Elm, 10c and up. Good Shrubbery, 10c and up. 2-yr. Grape, 5c and up. Red-leaved Barberry, Privet and Berry Plants. Also good Bermuda Grass Roots in large quantity.

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Certified stunt-free stock for lining out this fall. Heavily rooted, 2-yr. plants, 8 to 12 ins. high. Named varieties. Shipping now and booking spring orders.

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20,000 Myrobalan Plum Seedlings

Well rooted; tops require very little trimming. Also a limited amount of Dwarf Apple, 1-yr., 3 to 4 ft.

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Danville, N. Y.

ORCHARD TEST OF CHERRY ROOTSTOCKS.

Considerable work has been published in recent years on cherry rootstocks. Some of the work shows that Mazzard rootstocks were superior to Mahaleb in size and productivity of the tree and in longevity. In some other work Mahaleb was equal to Mazzard as a cherry stock and, in a few cases, even superior.

The cherry orchard on which this is a report was planted as a test of Mazzard and Mahaleb rootstocks on several varieties of both sweet and sour cherries. Several sources of Mazzard stocks and several sources of Mahaleb stocks were used in this test. Some of the sources of both species were foreign, the seed or seedlings being imported from Europe. One of the Mahaleb sources was seeds from a tree grown in Maryland, and four of the Mazzard sources were seeds of trees in the United States, one from Maryland, one from Virginia and two from the Pacific coast.

Three varieties of sweet cherries—Black Tartarian, Windsor and Schmidt—were grown on these stocks, and two varieties of sour cherries—Montmorency and Saint Medard. Seven rows of sweet cherries and seven rows of sour cherries were planted, each row being of fourteen trees each. The two species of stocks were alternated in the rows, first a Mazzard and then a Mahaleb, or vice versa. In this way paired tree comparisons were possible.

This orchard was planted in 1929 and continued until 1944. We knew less about orchard sites then than we do now, and although we thought that there would be good air drainage from this location, the site proved to be frosty. Two of the varieties of sweet cherries, Black Tartarian and Windsor, were completely killed out by winter injury within five years. The Schmidt remained until the end of the experiment, but suffered considerably from trunk injury. The sour cherries received no tree injuries from the cold, but the blossoms were so badly damaged by low winter temperatures and late spring frosts that only one full crop was ever harvested from this block. For this reason, no yield records have been used in our results. Trunk circumference measurements were taken from time

Final report on an orchard test of Mazzard and Mahaleb cherry rootstocks presented at the 1946 meeting of the American Society for Horticultural Science by William S. Clarke, Jr., and R. D. Anthony, of Pennsylvania State College.

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PARADISE ASPARAGUS

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1-year Rooted Cuttings, 2 and 3-year Nursery Plants, all varieties; propagated from stock taken from our own productive farms. **Guaranteed True to Name.** SEND for RIGHT WHOLESALE PRICES. Large quantities to Nursermen, Dealers and Commercial Growers

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GRAPE CUTTINGS

Price per 1000.
Concord, \$5.00; Niagara, \$5.50;
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Wire-bound, 100 per bunch, expertly cut. Packing free. Start cutting December 1. Place orders at once.

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CHOICE BLUEBERRY PLANTS

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Peach Trees, Grapevines and Shrubs

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PONZER NURSERY
Rolla, Mo.

to time, and at the close of the experiment the trees were removed and the tops weighted. These trunk measurements and weights of the tops were used as a basis for our studies.

So few of the sweet cherries survived that not much can be said about them. In the first two years, of eleven casualties, nine were on Mahaleb roots. After fifteen years, of seventeen Schmidt trees planted on Mazzard, eleven survived, and of eleven on Mahaleb, eight survived.

In the sour cherries all but three trees survived until the end of the experiment. However, large differences between Mazzard and Mahaleb stocks were seen in some rows, and in others no differences were apparent.

Virginia Mazzard stock made excellent trees. Maryland Mahaleb also made good trees. In a row where imported Mazzard was tested against Maryland Mahaleb as stocks, the trees were uniform and no differences between them were apparent. In four rows of Montmorency, two rows showed Mazzard much better than Mahaleb, and two showed no differences between the two species.

In the Saint Medard trees there were no large differences. In two rows where paired comparisons of this variety were made, one on Maryland Mazzard compared with Maryland Mahaleb, and the other on an imported Mazzard compared with an imported Mahaleb, the Mahalebs were, in fact, significantly larger than the Mazzards.

The important points brought out in these studies are as follows: The main factor is not so much whether the cherry stock is Mazzard or Mahaleb as the source of the stock. Some Mahalebs seem to be equally good as, and in some cases superior to, some Mazzards, while in other cases they are definitely inferior. Also, the variety of tree is important. Saint Medard behaved differently on the same stocks than Montmorency.

GOBIN'S NURSERY, Paradise, Cal., has had a change in mailing address as a result of the town's increased population. The shop continues at the same location, but the address is now Route 2, Box 2294, Paradise.

THE Chandler Landscape & Floral Co., Kansas City, Mo., celebrated the opening of its newly modernized store October 29 and 30. Festivities included the firm's annual flower show of chrysanthemums and colorful fall arrangements.

J. H. SKINNER & CO.

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WHOLESALEERS of:

2-year Apple

1-year Cherry, Peach, Apricot and Plum.

Apple and Pear seedlings, all grades.

Miscellaneous Ornamentals

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Your inquiries appreciated.

We are proud of our grade and quality of stock.

SMALL FRUITS

GRAPEVINES, RED RASPBERRIES, BLACK RASPBERRIES, PURPLE RASPBERRIES, DEWBERRIES, BOYSENBERRIES, BLACKBERRIES, BLUEBERRIES, CURRANTS, GOOSEBERRIES, ASPARAGUS, RED RHUBARB, VICTORIA RHUBARB, HORSE-RADISH and STRAWBERRIES.

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FRUIT TREES

HARRISON BROTHERS NURSERIES

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FRUIT TREES

1-yr.-old Cherry and Plum.

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Danville, N. Y.



CALIFORNIA ASSOCIATION OF NURSERYMEN

JACK LINCKE, Executive Secretary

6331 Hollywood Blvd., LOS ANGELES, CALIF.

SAN FERNANDO ELECTION MEETING.

Fifty-two persons attended the meeting of the San Fernando Valley Nurserymen's Association, which was held October 8 in the Sky room of the Lockheed air terminal, Burbank, Cal.

The following officers were elected to serve the association during the coming year: President, Ted Beach, La Playa Nursery; vice-president, Sandy Young, Young's Nursery, and secretary-treasurer, Paul E. Lombard, Bandini Fertilizer Co. New members of the board of directors include William Clark, Germain's Ranch Nursery; Henry W. Carter, Carter's San Fernando Nursery; Frank J. Smythe, Smythe's Nursery, and Julian Herman, Universal Nursery. Verne McIntyre, Toluca Lake Nursery, is sergeant at arms.

Visitors who were introduced at the meeting included Francis M. Burke, La Tuna Nursery; Mr. and Mrs. Roy Carter, Carter's San Fernando Nursery; Tommy Beach, son of the newly elected president, Ted Beach; Dick Smillie, Smillie's Foot-hill Gardens; Peter E. Mitrovich, Universal Nursery; Mr. and Mrs. J. G. Craig, Craig Nursery & Florist; Mr. and Mrs. D. K. Patton, Patton's Nursery & Garden Supply; Mable Hilberg, secretary to William Clark; Phyllis Johnston, secretary to Paul Lombard, secretary-treasurer of the association, and A. Gulazian, Sylmar Nursery.

Members of the auditing committee appointed by President Bill Powell are William Clark, Frank Smythe and Don Snyder.

President Powell reported on the recent state convention at San Diego. The San Fernando chapter was proud to have T. A. Sand, one of its members, elected president of the California Association of Nurserymen.

William Clark, of Germain's Ranch Nursery, Van Nuys, and his secretary arranged approximately forty bouquets of roses on the tables, and their beauty and fragrance added much to the occasion. Mr. Clark gave a short talk on each rose represented, which included Mme. Chiang Kai-shek, Grand Duchess Charlotte, Texas Centennial, Sonata, Eclipse, Charlotte Armstrong, Lulu, Best

Regards, Signora, Floradora, Peace, Yours Truly, Pink Dawn, Picture, Pinkie, Mirandy, Pinocchio, Betty Prior, Mark Sullivan, Countess Vandal and Fred Edmunds. The three outstanding roses were San Fernando, San Gabriel and San Luis Rey. San Fernando was predicted to be the biggest-selling rose in the next five years. A discussion followed as to whether or not the rose should be planted deep, and the nurserymen seemed evenly divided on this point. High pruning of the roses is recommended in January and February.

Paul Lombard, Sec'y.

CALIFORNIA NOTES.

San Mateo Junior College has started a class in ornamental horti-

culture for members of the trade, which meets on Thursday at 7:15 p. m. Rodney Strauss, fuchsia grower and landscape contractor, Redwood City, is in charge.

At the recent meeting of the Pacific coast section of the American Association for the Advancement of Science, held at San Diego, several talks of interest to nurserymen were given by research workers of the California schools. The topics included reports of tests on fertilizers, which proved definitely that no fertilizer other than nitrogen is needed for soils in the state. Other tests revealed that no effective measure has been found for the control of root rot diseases; a liquid defoliant has been developed to replace dusts, which are currently popular for the defoliation of cotton to facilitate the use of mechanical pickers, and a low oxygen content of the air can replace low temperatures for the preserving of perishables. At 60 degrees, with a low oxygen content, fruits and vegetables kept as well as they did at 40 degrees at a normal oxygen content. Prof. E. F. Serr showed pictures of pneu-

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Azaleas

Vigorous, well grown stock, well budded, with bushy, dark green foliage. Prices are net, delivered to your nursery.

	6 x 8 in.	8 x 10 in.
	\$.75 ea.	\$1.45 ea.
TRIUMPH Deep red, double blooms	.95 ea.	1.95 ea.
PAUL SCHAME Salmon-pink, double blooms	.95 ea.	1.95 ea.
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Pink Pearl, Temperance, and Mad. van der Cruysen, 6 x 8 in., \$.95 ea.; 8 x 10 in., \$1.95 ea.		

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matic pruning equipment, which, he said, could save growers thirty to fifty per cent on their pruning costs. Dr. P. A. Minges made a report on nematode control work over the state. He found that D-D was among the best materials for this purpose; that twenty pounds per acre, spaced at 18-inch intervals and not more than eight inches deep, gave the best economic control; in general, soil fumigation pays off only on long-growing crops; treatment is fully effective for only one year; on widely spaced crops, such as tomatoes, treatment directly in the row will save materials and costs and is quite as effective as treatment of the entire field; the soil moisture should be at field capacity, with a temperature of 50 to 70 degrees for the most efficient results.

The theft of over \$600 in checks and cash from the nursery of Roger Reynolds, Menlo Park, was reported in the newspapers. William Tiedman, manager, said the money was taken from a drawer in a roll-top desk during the noon hour.

Early construction is planned for the forest products laboratory at the University of California at Berkeley. DeWitt Nelson, state forester, says that research conducted at the new laboratory will reduce depletion of the state's stands of trees by developing ways for using a larger part of the trees harvested and by finding new uses for timber now being wasted.

The value of nursery plants and cut flowers produced in Los Angeles county in 1946 was about \$11,000,000.

The Visalia College Agricultural Association has leased a 160-acre farm, with option to buy, to provide laboratory facilities for classes studying meat and dairy production, horticulture and deciduous trees for fruit.

Dr. Kenneth Baker, plant pathologist at the University of California at Los Angeles, who is in charge of diseases of ornamental plants, has gone to Cornell University for about a year for a refresher course.

Doctor V. T. Stoutemyer, head of the department of ornamental horticulture at the University of California at Los Angeles, is completing some experimental work with plant propagation. It is reported that many kinds of plants, which normally do not strike roots and thus must be propagated from seeds, can be forced to root if kept under various colored lights while in the cutting bench. Different kinds of plants respond to different colored lights.

Australian beetles are being released at Siskiyou by the department of agriculture in an effort to control the Klamath weed, a serious pest in home gardens and nurseries, which

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PORTLAND 14, OREGON

Paul E. Van Allen

We still have a fairly good supply of

FRUIT TREES (mostly 1-yr.)
SMALL FRUITS and BERRIES
HEDGE PLANTS
BROAD-LEAVED
EVERGREENS
ROSES (No patented varieties.)

Quality Stock

CONIFERS AND BROAD-LEAVED
EVERGREENS
SHADE AND FLOWERING TREES
FRUIT TREE SEEDLINGS
FRUIT TREES
DECIDUOUS SHRUBS
VINES AND BULBS
PORTLAND ROSES
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Fruit Tree Seedlings
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Flowering, Ornamental and
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Oregon and Washington-grown
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Our Combination Carlots to
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AS ALWAYS— OREGON'S BEST SOURCE of GOOD ROSES

Limited crops reserved for
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PETERSON & DERING

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has also ruined many acres of pasture land.

Tom Dean, Lompoc, was elected president of the Lompoc Valley Lily Growers' Association.

The quarantine for the Pierce disease of grapes has been removed, as the state department of agriculture has concluded that it will not delay spread of the disease. The disease is transmitted by leaf hoppers.

Paul Moulder is passing the cigars around and announcing the arrival of Paul Charles, Jr.

Dr. H. M. Armitage, chief of the department of entomology of the state department of agriculture, has announced the appointment of three supervising entomologists: Robert Harper, with headquarters at Los Angeles; Herbert T. Osborn, with headquarters at Sacramento, and Robert P. Allen, with headquarters at San Francisco.

The officers of the California Horticultural Council are Ernest Higgins, Berkeley, president; Ray D. Hartman, first vice-president; Leslie D. Mayne, second vice-president; Douglas Baylis, treasurer, and Harry E. Nelson, 2423 Thirty-second avenue, San Francisco, secretary.

A large number of visitors are attracted every day to University avenue, Palo Alto, to see several miles of magnolia trees in bloom, which line the parkway on either side of the street.

Home gardeners were advised to grow the Daphne dauphina in the San Francisco area by a speaker at the San Francisco Businessmen's Garden Club. Reasons given included the fact that it would bloom in the area, while many other kinds would not, and that it would bloom several times each year.

Julius P. Gunzelman, who operated the Lomita Park Nursery for many years until he sold out about a year ago, is now operating the Broadway Garden & Pet Supply Store, 1132 Chula Vista avenue, Burlingame. He has built a new store and will have a lath house in back, in which to carry a small line of potted plants and bedding plants.

Henry Ishita, who, before the war, operated the Gold Medal Nursery, Los Angeles, which he sold to the Germain Seed Co. in 1942, has built a new range of greenhouses for starting bedding plants, at 16400 South Avalon avenue, Los Angeles.

The Los Angeles county farm adviser's office is appointing an assistant farm adviser who will devote full time to the nursery and greenhouse problems in the county. At present the work is being done by M. H. Kimball, who will work in close coopera-

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APPLE	\$30.00	\$25.00	\$25.00	\$18.00	\$18.00	\$12.00	\$18.00
PEAR	32.00	\$28.00	28.00	\$25.00	18.00	18.00	14.00

CHINESE ELM SEEDLINGS. Another of our specialties. Fine, well rooted stock.

	Per 100	Per 1000		Per 100	Per 1000
12 to 18 ins.	\$2.00	\$15.00	2 to 3 ft.	\$3.00	\$25.00
18 to 24 ins.	2.50	18.00	3 to 4 ft.	5.50	45.00
Elm, Chinese, 6 to 8 ft.	Per 100 \$ 80.00		Maple, Norway, Br., 6 to 8 ft.	Per 100 \$125.00	
Locust, Pink, Idahoensis, 6 to 8 ft.	175.00		Maple, Norway, Br., 8 to 10 ft.	150.00	

Carload freight rates to some point near you.

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FOR 1947-1948 SEASON

Fruit Trees
Small Fruits
Fruit Tree Seedlings
Flowering Trees
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Shrubs
Roses

and a general assortment of other nursery stock.

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Hillsboro, Oregon

GRAPEVINES

For Winter and Spring Delivery Order Now While List Is Complete

EUROPEAN TYPE, table varieties.
Thompson Seedless, early, white.
Monukka Seedless, early, black.
Malaga Red, early, large.
Malaga White, midseason, large.
Ribier, large, midseason, blue.
Muscat, large, midseason, white.
Lady Finger, long, midseason, white.
Black Hamburg, midseason, large.
Tokay, large, late, red.
Emperor, late, red.
Black Malvoisie, table or wine.

WINE VARIETIES
Alicante, red.
Golden Chasselas
Mission, black.
Grenache, black.
Zinfandel, black.

AMERICAN VARIETIES
Concord, black.
Delaware, red.
Portland, white.
Nagara, white.
Caco, red.
Fredonia, black.

Also several other varieties.
1 yr., No. 2 10 for \$ 1.00
2 yr., No. 1 10 for \$ 1.50
100 for 8.00 100 for 12.50
1000 for 80.00 1000 for 120.00
Packing free if cash with order.
Pierce and Phylloxera certificate.

VELVET PEAT PRODUCERS
1054 Dublin Blvd. Hayward, Calif.

ROSES

Two-year-old, field-grown plants. Send for wholesale list.

Maywood Rose
Nursery

P. O. Box 5033

Portland 13, Ore.

DOUGLAS FIRS

9 to 12 ins., \$10.00 per 100, \$75.00 per 1000.

Carefully gathered. Extra well packed.

COASTAL GARDENS

Sheridan, Ore.

DEL RANCHO FORTUNA

FRUIT TREES
and
GRAPEVINES

P. O. Box 548

McFARLAND, CAL.

NOTICE

Limited production makes it impossible to book orders for new customers.

HOWARD ROSE COMPANY
Hemet, California

tion with the department of ornamental horticulture of the University of California at Los Angeles. The office of the farm adviser is at 808 North Spring street, Los Angeles.

Walter B. Balch, of the Shell Chemical Co., recently gave a talk on soil fumigation before the Encino Garden Club.

Plans are being discussed to widen the scope of the pinto tag nurseries, so that pinto tag certification will be effective in several widely spread parts of the state rather than in only a few adjoining counties, as is now the case.

In some citrus groves in the state, soil fumigation is being used primarily for the root-pruning effect on the windbreaks. W. B. B.

USES OF 2,4-D.

Experimental work indicates that 2,4-D is an excellent weed killer for dandelion, plantain and many other lawn weeds. There is evidence to indicate that it can be used in the nursery on taxus and junipers to control broad-leaved weeds, reports Dr. A. M. S. Pridham, of Cornell University, in summarizing observations on many tests he has made of this chemical.

2,4-D has a place in the control of deep-rooted perennials such as quack grass and other troublesome weeds that are often multiplied rather than controlled by cultivation. These weeds can be virtually eliminated from an area of heavy infestation by plowing and then treating the soil with as little as ten pounds per acre of 2,4-D worked into the soil. Such fields would be ready for planting to taxus a month or two after treatment.

Perennial flowers and highly susceptible plants are likely to be injured, and the nurseryman is warned to proceed with caution. If at all possible, prepare soil at least a month, and preferably three months, prior to planting nursery stock.

2,4-D produces many types of response in ornamental plants. Lilacs and other deciduous plants may respond at the time of application, especially during the spring when growth is soft. The same application made to mature growth in autumn may not produce any obvious effect. The following spring distortion of foliage is likely to be observed on some shoots. Localization of the trouble is characteristic; pruning out affected branches is recommended, for the trouble has persisted in subsequent years in some cases under observation.

Control of poison ivy and of hon-

eysuckle has not been completely successful. Early spring applications have given best results. These can be enhanced by second and third applications. The weed killer does not remove the poison ivy nor does it remove any wood weeds. After the plant is killed, the deadwood must be cleared away; hence this method of control has its limitations. Plants that appear to be killed by 2,4-D often revive the following season with malformed foliage.

Delayed response to applications of 2,4-D are often found in perennials. Pokeweed furnishes a dramatic example. Normal plants failed

"Doc" Cha-Kem-Co



says— "No Retail Nurseryman
Should be Afflicted With
CRUMBLING BALLS"

The crumbling balls disease causes yearly losses to the retail nursery industry that run into the hundreds of thousands of dollars. **STOP THIS—DON'T HAVE CRUMBLING BALLS.** Don't let the grower of B&B stock pass off his crumbling balls to you. The specific cure for Crumbling Balls disease is **PROLONG**. Insist that your grower delivery B&B **PROLONG**-treated stock. 1 gal. of **PROLONG** diluted with 8 gals. of paint thinner will treat approximately 160 wraps.

Besides preventing Crumbling Balls disease, **PROLONG** has many other uses. **GIVES POSITIVE AND LASTING PROTECTION AGAINST TERMITES, DRY ROT AND POWDER POST BEETLES.** It prevents or retards rotting of rope, twine, sand bags, lath houses, poultry houses, fence posts, mudsills and posts for grape trellising.

PROLONG is easy to apply—may be applied with a brush, spray gun or by dipping. No pressure treatment is required.

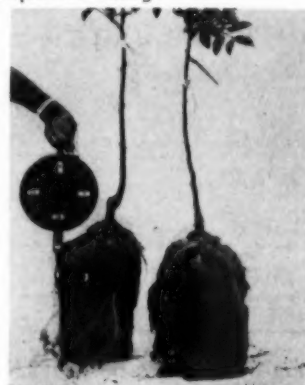
Retail prices: (usual discount to trade) 1 gal., **\$7.50**; 5 gal., **\$30.00**. Price on 30-gal. drums on request.

**PROLONG—ANOTHER
CHA-KEM-CO QUALITY
PRODUCT.**

Send for **FREE Folder**,

"Crumbling Balls an Economic
Disease of the Nursery Industry."

R. L. CHACON CHEMICAL CO.
Dept. AN, 10,000 Atlantic Ave., South Gate, Calif.



Ball on left shows tensile strength of **PROLONG**-treated, still sound after 8 months in shavings. The crumbling ball on the right, after 8 weeks in the same medium.

PACIFIC COAST NURSERY

2244 N. Skidmore Ct.
Portland 11, Ore.

Pioneer seedling growers on the Pacific Coast since 1914.

Specializing in fruit tree seedlings. **Angers Rooted Quince Cuttings, Chinese Elm Seedlings and English Privet.**

We aim to please
with quality stock.

John Holmason & Sons, Props.

FRUIT and NUT TREES

Filbert Trees a Specialty
Two-year—Nursery-grown—
Transplants
Quality Supreme
Barcelona (and Pollenizers,
DuChilly and Daviana)

CARLTON NURSERY CO.

"Over Half a Century"—Since 1890
Forest Grove, Oregon

MAHONIA AQUIFOLIUM

1-yr., field-grown seedlings, row run,
\$30.00 per 1000; \$4.00 per 100.

Liberal count. No packing charge if
check accompanies order.

MOUNT VERNON NURSERY

Mount Vernon, Wash.

ROOTED CUTTINGS

Per 100
Chamaecyparis law. ellwoodii, blue,
upright, very dwarf but fast-
growing when young. Cuttings
average about 3 to 4 ins., well
rooted \$10.00
Chamaecyparis law. fletcheri 10.00
Taxus baccata fastigata 10.00
Thuja occ. aureo-variegata (Gold-
spot Arborvitae), good hedge
subject 8.00

Write for price list which also lists
Perennials in seedlings and transplants,
field-grown in sandy loam.

MITSCH NURSERY

Wholesale Propagators and Growers
AURORA, ORE.

KEEPS ROOTS MOIST

★ When packing bare roots or
deciduous stock for shipment or
storage, use **Wood Feathers** brand
cedar shavings (red cedar shingle
tow). There are 3 reasons for **Wood
Feathers** superiority:

1. Large moisture-absorbing ca-
pacity.
2. Will retain moisture for a long
period of time.
3. Economical and easy to use.

Wood Feathers
BRAND

CEDAR SHAVINGS

P.O. Box 37, North Portland, Oregon

BALED SHINGLE TOW

(CEDAR SHAVINGS)

WM. A. JOHNSTON

408 Postal Bldg., Portland 4, Ore.

Pronouncing Dictionary

of Plant Names and Botanical Terms

64 pages, 3000 names, 25¢ per copy

AMERICAN NURSERYMAN

343 S. Dearborn St. Chicago 4, Ill.

to respond to autumn applications of one-tenth of one per cent strength at 200 gallons to the acre. The following spring entirely abnormal plants were produced. The plants were growing in a shaded location. Occasional plants in an open location showed red foliage and red stems. Flower and fruit distortion was also noted. In garden perennials all these changes are trouble for nurserymen.

With garden flowers a wide range of response has been noted. Lupines are severely injured by one-tenth of one per cent concentration in either spray or vapor form. At one-tenth the above amount of distortion is minor and flowering is advanced. Lower concentrations produced still earlier flowering. Untreated plants are still in bud while the others are in seed.

A more common response to small amounts of 2,4-D, either spray or vapor, is dwarfed growth, delay in flowering and color changes in the foliage. Such changes occurred in experiments with larkspur, geranium and coleus. With garden flowers this may not be serious, but for the commercial florist late-flowering, off-color plants are virtually a complete loss. In a propagating house for perennials retarded growth is poor business, particularly if it is to be followed by abnormal flowering. These statements are made to warn nurserymen that 2,4-D is still in the experimental stage and that its use on lawns gives such excellent weed control that further application to other crops seems a tempting prospect. Promiscuous use of 2,4-D by unskilled workers should not be tolerated.

KURT W. BRUME, who operated a nursery for many years at Rainier, Ore., has now located his business at Aloha, Ore.

G. HALE HARRISON and John L. Harrison, of Harrison Bros. Nurseries, Berlin, Md., made a trip through New York state several weeks ago. Among the nurserymen they visited were John W. Kelly, of Kelly Bros. Nurseries, Inc., and Howard Maloney, of Maloney Bros. Nursery, both of Dansville, and Charles H. Perkins, president, Jackson & Perkins Co., Newark. The Harrisons attended the Cornell-Navy football game October 18 at Ithaca and report that the weather on that day was the warmest they could remember at a football game. G. Hale Harrison, who was graduated from Cornell in 1916, greatly enjoyed visiting the university again.

WANT ADS

Help and Situation Wanted
and For Sale advertisements.

Display: \$3.00 per inch, each insertion.
Lines: 25¢ line; Minimum order \$2.00.

HELP WANTED

By Large Wholesale Nursery

Experienced propagator of ornamental nursery stock. Should be capable of grafting evergreens and propagating evergreens, shrubs and vines from softwood cuttings, and able to handle help. Greenhouse and coldframe facilities available. Good opportunity for man who can produce. Write, giving full details of experience and references.

WILLIS NURSERY CO.
Ottawa, Kan.

FOR SALE

An unusual opportunity to acquire a profitable going business; 8 acres of fine soil; packing house and cellar; city of 40,000; on main avenue. Price \$15,000.00; enough salable stock to more than pay this. Cash, or ½ cash, balance arranged. 2 years' profit could more than pay out. Might consider some kind of partnership. Wish to retire.

TREADWELL NURSERY CO.
Great Falls, Mont.

HELP WANTED

Nurseryman for retail nursery. Must know how to dig, ball and platform small and large trees, evergreens, etc., and know plants. Excellent year-around job, high salary. Apply:

R. K. RIBSAM NURSERIES, INC.,
Box 100 Trenton, N. J.

FOR SALE—Established nursery on approximately 8 acres at Denver, Colorado. Completely equipped, trucks, tractors, etc.; also over \$5,000.00 worth of fertilizer. Large stock of shrubs, trees and flowers. 4-car garage, barns, sheds and chicken house. Two modern brick bungalows, one a 3-bedroom with office, the other a 4-room. Both in A-1 condition. Established successful business for 32 years. Owner will accept \$15,000.00 cash and carry balance for right party. Call, write or wire Mr. Jack, East 7187 or Dexter 1511. JACK WEHNER, Realtor, 4622 E. Colfax Ave., Denver, Colo.

SITUATION WANTED—Englishman seeks position as manager or executive. Experience as manager with well known British nurseries; shrubs, ornamentals, conifers, flowering trees, herbaceous and alpine, glasshouse plants and produce, mushrooms. Expert landscape gardener, rock garden design and planting for effect, truck farming and market gardening agriculture. State salary offered. C. B. Stevens, c/o Wm. Sayer, 242 Cedar St., East Greenwich, R. I.

NURSERYMEN—Greenhouse and Nursery properties. Licensed Realtors, specialists in this type of property. List with us for good results. HORTICULTURAL REALTY CO., 40-42 Main St., Flushing, N. Y.

JOSEPH GRIMSHAW has sold the Grimshaw Citrus Nursery, Hayward, Cal., and has started a new firm under the name, Velvet Peat Producers, 1054 Dublin boulevard, Hayward, which will handle some nursery stock as well as peat.

New Miracle Insecticide!
VAPOTONE
REG. U.S. PAT. OFF.
SPRAY
KILLS RED SPIDER
and APHIS

Greenhousemen are cutting costs... saving plants... getting such sensational results as these with VAPOTONE Spray (manufactured exclusively by California Spray-Chemical Corp.)

HAVE YOU ever figured up how much profit you're being robbed of by spiders, mites, aphids and thrips?

Here's great news: VAPOTONE kills Red Spider and Aphids, also Mealybugs. And VAPOTONE can give you effective control—fast! Field reports show VAPOTONE's excellent killing power against pests on greenhouse plants within a few hours after application.

Take Mealybugs, for instance: Mealybugs have been killed up to 75% by one treatment

on gardenias under glass. In a recent treatment against Mealybugs, a repeat treatment after 48 hours showed a control of better than 99%.

Get the money-saving facts!

VAPOTONE Spray is manufactured exclusively by California Spray-Chemical Corp. and is available on order from any of the District Offices listed below. CALIFORNIA SPRAY-CHEMICAL CORP., Richmond and Whittier, California; Portland, Oregon; Kansas City, Missouri; Dallas, Texas; Orlando, Florida; Elizabeth 2, New Jersey.



CLASSIFIED ADS

25 cents per line.

Minimum order, \$2.00.

AZALEAS

AZALEAS

HINO-CRIMSON—Recently introduced and proving popular. It has showy, clean, crimson-red, nonfading flowers which show beautifully against dark, glossy green foliage. Excellent forcer and harder than Hinodegiri. Ask for color print. Rtd. ctgs. available now, \$12.00 per 100, \$100.00 per 1000, 2 1/2-in. pots, after Jan. 1, \$20.00 per 100.

Other rtd. ctgs. available now.

	Per 100	Per 1000
Hinodegiri	\$6.00	\$50.00
Kaempferi	6.00	50.00
Ledifolia Alba	6.00	50.00
Louise Gable	10.00	100.00
Maxwellii	6.00	50.00

Please send check with order.
JOHN VERMEULEN & SON, INC.
 Westbury, L. I., N. Y.

AZALEAS

For forcing or landscape planting.
Coral Bella, Hinodegiri, Salmon Beauty, Salmon Queen, Snow, Hexe, Christmas Cheer, Mme. Pericat, Peach Blow, 30,000 beautiful, stocky plants grown in full sun.

	Per 100	Per 1000
6 to 8 ins., each	\$0.70	\$6.50
8 to 10 ins., each	.90	8.50
10 to 12 ins., each	1.15	1.00

Balls burlapped if desired at 10c each additional.

Packing, if necessary, extra. 250 at 1000 rate. Order now for fall.

THE TANKARD NURSERIES
 Exmore, Va.

AZALEA KAEMPFERI

Extremely vigorous rooted cuttings of Mixed Kaempferi Hybrid Azaleas available for immediate shipment. Cuttings taken from our standard collection of named varieties.

	Each	Per 1000
Mixed Azalea kaempferi	\$0.05	\$45.00
A. kaempferi Atlanta	.05	50.00
A. ledifolia Alba	.05	45.00

KOSTER NURSERY

Bridgeport, New Jersey

AZALEA HEXE AND HINODEGIRI

	Well budded plants	Each
4 ins., 50 or more		\$0.40
4 to 6 ins., 50 or more		.50
6 to 8 ins., 50 or more		.60

Less than 50, 10 per cent plus.

Cash with order, crating free. F.O.B. Nursery.

RICHARD P. RESSEL

Mulino, Ore.

AZALEAS—ROOTED CUTTINGS

Hinodegiri, Coral Bella, Snow, Amoenae, Pink Pearl, Salmon Beauty, Ledifolia Alba, \$6.00 per 100; \$50.00 per 1000.

JOHN WIGMORE

Norman Ave., Riverside Park, Riverside, N. J.

AZALEAS, RHODODENDRONS, BOXWOOD
 Write for our fall trade list of plants for landscape planting, forcing and lining out.

R. D. S. LEVICK NURSERY CO.
 Bridgeport, N. J.

LEVICK NURSERY CO.

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STRAWBERRY PLANTS—Certified. Leading varieties, grown on the Cumberland plateau. Nurserymen, write for wholesale price list.

ROMINES PLANT FARM, Dayton, Tenn.

100,000 LATHAM RASPBERRY PLANTS, No. 1 suckers, \$30.00 per 1000.

C. H. BENEDICT

Route 1 Grand Junction, Mich.

BULBS and TUBERS

LILIES

Hardy northern-grown planting stock.

Grown from seed.

	1-yr.	2-yr.
Regale	\$15.00	\$30.00
Ten. Coral	15.00	30.00
Ten. Golden Gleam	20.00	40.00
Concolor	30.00	60.00
Willmotiae	20.00	40.00
Phil-Fornosianum	20.00	40.00
Amabile	20.00	40.00
White Queen	30.00	60.00
Princeps	20.00	40.00

Cash with order.

J. HENDRIKS, GROWER, Portage, Mich.

Our fall list is now ready for mailing, listing 13 of the better florists' varieties. Each and every order is inspected by a certified state inspector before leaving our warehouse; this is your protection. See our announcement on page 29. Write now for list.

QUALITY GLADIOLUS GARDENS

Chester Sirois

Phone 11 Route 2, St. Anne, Ill.

HOLLAND-GROWN BULBS

HYACINTHS, 16 to 17 cm., \$13.00 per 100.

Gertrude (pink), L'Innocence (white), Bismarck (blue), City of Haarlem (yellow).

CROCUS, 5 to 9 cm., \$2.50 per 100.

King of the Blues (blue), Golden Yellow.

BENTON COUNTY NURSERY CO., INC.

Rogers, Arkansas

DOUBLE TIGER LILY BULBS

4 to 5-in. circumference.....\$ 8.50 per 100

5 to 6-in. circumference..... 12.00 per 100

5 per cent discount in lots of 1000.

THE EVERGREEN NURSERIES

Lowell, Ind.

1947 GLADIOLI

Wholesale and retail, listing many choice varieties and newer introductions.

HI-LO HILL FAR

Rt. 3 Lebanon, Ore.

Surplus Stock

can be easily and quickly turned into

Cash

listing it in the

American Nurseryman Classified Ads.

CUTTING WOOD

HARDWOOD CUTTINGS

Delivery after Dec. 15. From fresh-made, current-year wood. From our own plantings and blocks. Carefully checked yearly for accuracy. 6 1/2 inches long.

Cornus sibirica.....\$4.00

flaviramea..... 5.00

paniculata..... 4.00

amomum..... 4.00

elegantissima..... 7.00

Devilliana trifida..... 5.00

Elder, canadensis..... 4.00

cut leaf..... 4.00

red berries..... 5.00

Forsythia intermedia..... 4.00

spectabilis..... 4.00

dwarf..... 6.00

Lonicera heckrothii (vine)..... 6.00

bella albidia..... 3.00

bella rosea..... 3.00

morrowii..... 3.00

tatarica rosea..... 5.00

korolkowi..... 6.00

zabell..... 6.00

syringantha..... 6.00

maackii..... 4.00

Hydrangea A. G...... 6.00

Paeonia..... 5.00

Lilac, rothomagensis..... 5.00

Philadelphus, Bouquet Blanc..... 4.00

Lemoine..... 6.00

grandiflorus..... 3.00

virginiana..... 6.00

Physocarpus opulifolius aureus..... 4.00

opulifolius nanus..... 6.00

Privet, Amur River North..... 4.00

Ibota..... 3.00

Regel (true)..... 4.00

Sorbaria sorbifolia..... 4.00

Spiraea billardi rosea..... 3.00

freibelli..... 4.00

thunbergii..... 4.00

trichocarpa (Korean)..... 4.00

vanhouttei..... 4.00

Symphoricarpos racemosa (Snowberry)..... 4.00

chenaultii..... 4.00

Viburnum dentatum..... 5.00

prunifolium..... 5.00

Poplar, Lombardy..... 4.00

Willow, Niohe Weeping..... 3.00

Wincasin..... 3.00

Golden..... 4.00

Pussy..... 5.00

Packed free. Cash with order, please. Arrival in good order guaranteed.

SCOTCH GROVE NURSERY

Scotch Grove, Iowa

AMERICAN NURSERYMAN

JUNIPER AND BIOTA CUTTING WOOD, Good tip cutting wood, cut 10 to 15 ins. long, not trimmed; packed in bundles of 50, ends wrapped in moss. \$10.00 per 1000, in the following varieties: Blue Cone, Blue Spiral, Baker, Bonita, Berckmann, Mayhew, Retinospora, Pfister and Spiny Greek, Fall delivery. Cash with order please.

A. M. DAVIS FLORAL & NURSERY CO.
 Brownwood, Tex.

If you don't find what you want
 try a Classified Ad
 under the heading "Wanted."
 It's cheaper than mailing out a want list.

EVERGREENS

JUNIPERS

For Spring Delivery

	Per 100
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Admirabilis, blue-green creeper, 6 to 9 ins., X.....\$ 18.00

Andorra, 12 to 15 ins., XX..... 45.00

Canert, 6 to 9 ins., X..... 18.00

Canert, 12 to 15 ins., XX..... 45.00

Dundee, grafts, 2 1/2-in. pots..... 50.00

Hetel, grafts, 2 1/2-in. pots..... 50.00

Hill's Pyramidal, 6 to 9 ins., X..... 35.00

Koster, grafts, 2 1/2-in. pots..... 50.00

Pathfinder, 3 to 6 ins., X..... 25.00

Pfister, 6 to 9 ins., X, cuttings..... 35.00

Pfister, grafts, 2 1/2-in. pots..... 50.00

Pfister, 6 to 9 ins., X..... 20.00

Robinhoud, 6 to 9 ins., X..... 25.00

Robinhoud, new pyramidal scope, grafts, 2 1/2-in. pots..... 50.00

Savin, 24 to 30 ins., XX, field-grown..... 200.00

Tamariscifolia, 6 to 9 ins., X..... 25.00

Virginiana, 6 to 9 ins., X..... 25.00

Virginiana, grafts, 2 1/2-in. pots..... 50.00

Virginiana, 4 to 6 ins., X, field-grown..... 8.00

Virginiana, 6 to 9 ins., X, field-grown..... 15.00

Virginiana, 9 to 12 ins., X, field-grown..... 15.00

Virginiana, 15 to 18 ins., XX, field-grown..... 45.00

Virginiana, 18 to 24 ins., XX, field-grown..... 60.00

Virginiana, grafts, 2 1/2-in. pots..... 50.00

All our lining-out evergreens are dug bare root, puddled and packed in moss. Grafts shipped from pots. Packing and boxing at cost.

NEBRASKA NURSERIES, INC.

4815 "O" St. Lincoln 8, Neb.

EVERGREENS

We wish to move the following trees this Fall, if possible. All good transplanted stock. Beetle certified. Quantity governs price. Let us quote on your needs.

400 Pine, Austrian, 18 to 24 ins.

300 Pine, Austrian, 5 to 6 ft.

100 Pine, Austrian, 3 to 4 ft.

100 Pine, Austrian, 4 to 5 ft.

1000 Pinus resinosa, 2 to 3 ft.

1000 Pinus resinosa, 3 to 4 ft.

250 Pinus resinosa, 4 to 5 ft.

1000 Pine, Scotch,

CAMELLIAS

For fall shipment quantities orders only. 25 per cent deposit will reserve your order. Order NOW for choice selection.

STANDARD CAMELLIAS, such as Chandleri Elegans, Pink Perfection, Cameo Pink, Monarch, Sarah Frost, Gloire de Nantes, Prof. Sargent, Abby Wilder, Jarvis Red, Pope Plus, etc.

Roots dipped in mud. In pots. \$1.25 \$1.75

12 to 18 ins. \$1.25 \$1.75
Rooted cuttings, \$25.00 per 100.
RARE CAMELLIAS, such as Debutante, Purple Dawn, Lee's Pink, Kumasaka variegated, Nagasaka, Alba Superba, Gigantea, Victor Emanuel, Laurel Leaf, Col. Firey, Gov. Mouton, St. Elmo, Glen 40, Margharita Calceionie, Lady Van Sittard, Rev. John Bennett, Mme. de Strekaloff, Woodville Red, Pink Ball, Purity, Elthlington White, Snow Drift, Rose Dawn, Daikagura, etc.

Roots dipped in mud. In pots. \$2.25 \$2.75

12 to 18 ins. \$2.25 \$2.75
Rooted cuttings, \$50.00 per 100.
Check with order, please.
NATIONAL NURSERIES

Dept. 26 Biloxi, Miss.

TRANSPLANTED LINING-OUT EVERGREENS.

Per 100 Per 1000
Colo. Blue Spruce, 3 to 6 ins. x \$7.50 \$65.00
Norway Spruce, 3 to 7 ins. x 6.50 60.00
White Spruce, 3 to 6 ins. x 6.00 50.00
Red Spruce, 6 to 18 ins. xx 10.00 85.00
Canadian Hemlock, 6 to 12 ins. x 15.00 100.00

SEEDLINGS.

Scotch Pine, 4 to 6 ins. 5.00 40.00
Scotch Pine, 2 to 4 ins. 3.50 30.00
American Red Pine, 3 to 8 ins. 5.00 40.00
Colo. Blue Spruce, 4 to 10 ins. 7.50 60.00
Douglas Fir, 4 to 10 ins. 7.50 60.00
Douglas Fir, 3 to 6 ins. 4.00 30.00

Minimum order \$10.00. Cash, please.
SUNCREST EVERGREEN NURSERIES
Johnstown, Pa.

TAXUS CAPITATA

We have a block of 10,000 upright Yews that we are now offering for sale. Every plant is a compact, tightly sheared specimen. We will book your order now for this fall or for the spring of 1948.

Each
1 1/2 to 2 ft. \$3.25
2 to 2 1/2 ft. 4.00
2 1/2 to 3 ft. 5.00
3 to 3 1/2 ft. 6.50
WOODBORNE CULTURAL NURSERIES, INC.

Office: Jericho Turnpike, New Hyde Park, L.I., N.Y. Phone: Fieldstone 7-2129; Nurseries: Lower Half Hollow Rd., Melville, L.I., N.Y.

LINING-OUT STOCK

Per 100 Per 1000
Pachysandra terminalis \$ 4.00 \$ 40.00
Red Jap. Maple, pot gr. grafts 75.00
Andromeda Jap., pot gr. R.C. 25.00 200.00
Taxus cuspidata, 1-yr., bedded 15.00 125.00
Taxus cuspidata, 1-yr., bedded 25.00
Taxus hispida, 1-yr., bedded 15.00 125.00
Taxus hispida, 1-yr., bedded 17.50 150.00
Taxus brevifolia, 1-yr., bedded 20.00
Thuja canadensis, 2-yr. tr. 7.00 60.00
Complete list of liners, including Azaleas, Rhododendrons, etc., on demand.
VERKADE'S NURSERIES, Wayne, N. J.

LINING-OUT STOCK

20,000 Burford Holly, rooted cuttings, 4 to 6 ins., \$18.00 per 100.
10,000 Ligustrum (wax-leaved) lucidum, rooted cuttings, 4 to 6 ins., \$10.00 per 100.
500 Irish Fastigiate Juniper, 4 to 6 ins., \$15.00 per 100.

Ten acres of finished nursery stock at very low prices to nurserymen in trucking distance. Bring your truck and labor and dig your plants.

BUCHANAN'S NURSERY

Phone 23939 Raleigh, N. C.

RHODODENDRON UNDERSTOCKS

Catawbiense, ponticum, Discolor, twice trepl., 3-yr.-old, with ball, 8 to 8 ins., strong plants, 30c each. Extra-strong plants, 40c each.

50, minimum order; crating free; cash with order. F. O. B. Nursery.
RICHARD F. RESSEL
Mullino, Ore.

1500 Taxus cuspidata, 1 1/2 to 2 ft. 2 to 2 1/2 ft. 400 Taxus hispida, 2 to 2 1/2 ft. 2 1/2 to 3 ft. and 3 to 4 ft. Other Evergreens, flowering Shrubs and 2-yr. Apple trees. Have to move, selling out. No beetle certificate.

M. W. REILLY Elmira, N. Y.

We are now booking orders for cut Christmas trees and evergreen tip branches. 7 varieties.

PEQUOT NURSERIES

R. R. 3 Brainerd, Minn.

200,000 Blue, White and Norway Spruce, 2 to 6 ft. 50,000 mixed Blue Spruce, 30,000 cut trees for Christmas, 6 to 7 ft. I. C. PATTON EVERGREEN NURSERY
Shepherd, Mich.

LINING-OUT STOCK

Price list on request.
GIRARD BROS. NURSERY
Geneva, Ohio

800 Juniperus horizontalis plumosa (Andorra Juniper), 3-ft. spread, sheared, \$250.00 per 100. Ivies for outside planting: Large-leaved English (long runners), also Hahn's Branching Ivy, \$75.00 per 1000.
TRITTSCHLER'S GREENHOUSES
4425 West Lawn Drive Nashville 9, Tenn.

FRUIT TREES

We have a good supply of the finest dormant bud peach and apricot trees that we have ever grown to offer the trade this season. Our trees are heavy caliper, straight and well rooted. Also have a good supply of pecan trees in leading varieties. Write for wholesale prices.

COCKRELL'S RIVERSIDE NURSERY
Route 1 Goldthwaite, Texas

FILBERT TREES

Select 2-year transplants. Choice assortment of fruit and shade trees, shrubs, roses and evergreens.

BENEDICT NURSERY CO.
735 N. E. 47th Ave.
Portland 16, Ore.
"Since 1890"

PEACH TREES

Varieties: Champion, Mayflower, Red Bird, Cling, Indian Cling, 2 to 3 ft., \$5.00 per 100, \$140.00 per 1000; 3 to 4 ft., \$30.00 per 100, \$200.00 per 1000. Concord Grapevines, 1-yr.-old, No. 1, \$8.00 per 100; \$50.00 per 1000.
PONZER NURSERY, Rolla, Mo.

We have 50,000 1-yr. Peach Trees, 70,000 June Buds and a complete line of Fruit Trees and Shrubbery. Write for our prices before you buy.

JOPPA NURSERY CO.
Joppa, Ala.

HARDY PLANTS

HARDY MUMS, field clumps, 50c each. All good ones, Algonquin, Apricot Glow, Autumn Greetings, Aviator, Barbara Small, Bonfire, Bronze Pyramid, Butterball, Charles Nye, Champion Cushion, Chippewa, Early Wonder, E. A. Wander, Echoes, Fireglow, Glacier, Glowing Coals, Goblin, Golden Treasure, Harbinger, Heatherbloom, Irene, Mandalay, Morning Glow, Orchid Spoon, Olive Longland, Pygmy Gold, Pink Cushion, Pink Radiance, Pomponette, Red Gold, Red Riding Hood, Robert Brydon, September Cheer, Sequoia, Stewart, The Chief, The Moor.
English Varieties, 50c each: Buttercup Copelia, Crimson Buttercup, Eldorado, Gold Standard, Hector (white), Hillcrest Red, Mrs. Don McVior, Orange Glow, Tiger, Westbourne.

Closing out the following at 30c each: Boreas, Calendula, Calcite, Drifted Snow, Duluth, Garden Queen, Little Eskimo, M. J. Costello, North Star, Pipestone, Polar Ice, Primula, Red Bank, Red Hussar, Redsa, Redwing, September Dawn, September Sunshine, Serene, Sun Red, Virel.
If there are some other varieties you want, send in your order at 50c each. Other English varieties, 75c each.
McINICH GREENHOUSES St. Joseph, Mo.

HARDY PERENNIALS

Transplanted and seedling plants, field-grown in sandy loam. Write for complete price list. The following are over 1-yr., large, transplanted plants.

Per 100
Aquilegia longissima hybrida \$12.00
Carnation, Burpee's Super Giant 8.00
Primrose polyanthus, Western Giant
strain 8.00
Also see our display ad in this issue.

MITCH NURSERY
Aurora, Ore.

BLEEDING HEARTS

Selected 5 to 8-eye clumps.
Per 25 Per 100 Per 1000
\$12.50 \$45.00 \$425.00
3 to 5-eye clumps.
\$10.00 \$35.00 \$325.00

Per 100 Per 1000
\$8.00 \$75.00

THE FLOWER FARM
East McKeesport 11, Pa.

GYPHOPHILA BRISTOL FAIRY

Immediate delivery.
1-yr. field-grown
Extra-heavy grade
Per 25 Per 100 Per 1000
\$12.50 \$45.00 \$425.00
No. 1 grade.
\$10.00 \$35.00 \$325.00

THE FLOWER FARM
East McKeesport 11, Pa.

Send us your perennial want list. Perennial price list now available.

VITNER'S GARDENS
Manchester, Conn.

Perennial Growers

PACHYSANDRA TERMINALIS, heavy rooted cuttings, \$4.00 per 100 and \$35.00 per 1000.

EAST HILL NURSERIES
Chesterland, Ohio

HARDY PHLOXES AND PERENNIALS.

If interested, write for our price list.
KNOLL & WALTERS PERENNIAL FARM
R. 2, Box 98 Zeeland, Mich.

When you think of FINE PERENNIALS THANKS!

for thinking of us.
Write for the new catalog ready now.
THE JOSEPH F. MARTIN CO.
P. O. Box 189, Painesville, O.

BLEEDING HEARTS.

Per 100
Dicentra Spectabilis, 3 to 5 \$40.00
Dicentra Eximia, 3 to 5 20.00
Cash with order.
J. HENDRIKS, GROWER, Portage, Mich.

ASTERS

Hardy Asters from field: Mt. Everest (white), Beechwood Challenger (red), Sunset (pink), Heavy, 1-year-old field plants, \$1.80 per 10; \$15.00 per 100.
APPALACHIAN NURS. Waynesboro, Pa.

HARDY CARNATION

Crimson King, field-grown, \$15.00 per 100; \$120.00 per 1000.
Send for trade list.
ELKHART NURSERY CO., Elkhart, Ind.
Formerly Fox Nursery.

Gypsophila Bristol Fairy, grafted, 2-in. pots, \$20.00 per 100; Delphinium Belladonna Impr., 1-year field seedlings, \$3.50 per 100, \$30.00 per 1000. Daisy, Mt. Shasta, div., \$12.50 per 100.
STRATFORD GARDENS, Delaware, Ohio

ROSEBUSHES

THE FINEST ROSES GROWN

All of our Rosebushes are 2-year-old, field-grown plants; sulphur dusted throughout the entire growing season; budded, cultivated, dug and packed for shipment by expert workmen, which assures them reaching you in first-class condition. Our Rosebushes are all produced in the greatest Rose-growing section in the world—the Tyler area. Our list of satisfied customers grows larger year by year. There's a reason. A trial order will convince YOU. Mail or wire us your order—or visit our nursery and see for yourself how our Rosebushes are produced and handled.

CLIMBERS

Talisman, red and yellow
Paul's Scarlet, showy red
Red Radiance, red
Caledonia, pure white
Mrs. Pierre S. du Pont, deep yellow
Pink Radiance, pink
K. A. V., cream-white
Marchal Niel, old-time favorite yellow

POLYANTHUS

Ideal, red
Golden Salmon, salmon-red
Kathryn Poulsen, beautiful pink
Elsie Poulsen, pink
Red Lafayette, red

TWO-TONED

Talisman, red and yellow
Pres. H. Hoover, yellow and red
Edith Nellie Perkins, pink and crimson

YELLOW

Golden Charm, yellow Talisman
Golden Dawn, deep yellow
Golden Ophelia, pure white
Mrs. Pierre S. du Pont, rich yellow
Sour Therese, one of the best
Luxembourg, copper-yellow
Roslyn, lemon-yellow
Lady Hillingdon, hardy, prolific
Betty Grace Clark, sport of Luxembourg
Joanna Hill, very good

WHITE

White American Beauty, pure white
Caledonia, clear white
K.A.V., cream-white
F. K. Druschki, very good

RED

Radiance, red
Etoile de Hollande, bright red
Syracuse, vermillion
Rouge Mallerin, dark red
Poinsettia, one of the best
Grenoble, deep red
Ami Quinard, the black Rose
E. G. Hill, long-stem Rose
Francis Scott Key, large, very double
Charles K. Douglas, very large red
Sensation, scarlet, prolific
McGredy's Scarlet, crimson
American Beauty, old-time favorite

PINK

Editor McFarland, brilliant pink
Hiarchiff, sport of Columbia
Columbia, rose-pink
Pink Radiance, soft, even pink
Mrs. Chas. Bell, shell-pink
Dainty Bess, single
Betty Uprichard, very good
Margaret McGredy, dark pink
Paul Neyron, very large

Wholesale prices.
No. 1, 35c each in lots of 100 or more; 30c each in lots of 1000 up.

No. 1 1/2, 27 1/2c each in lots of 100 or more; 25c each in lots of 1000 up.

No. 2, 22 1/2c each in lots of 100 or more; 17 1/2c in lots of 1000 up.

TERMS: 25 per cent deposit with your order, balance C.O.D. (Sold only in multiples of 10 of a grade and variety.)

MARTIN'S ROSE NURSERY

P. O. Box 155, R. 1 Arp, Texas

NORTHERN OHIO ROSES

For Fall delivery.

Write for list.

LESTER F. SQUARE NURSERIES

Fairport-Nursery Rd., Painesville, Ohio

ROSEBUSHES—Continued

ROSEBUSHES—2-year, field-grown plants. Crown Right—Dusted. Stored Right—Packed Right. Proper cultivation, fertilization and dusting insure quality plants. Digging and handling equipment mechanized for efficiency. New completely refrigerated and air-conditioned cold storage insures plants in perfect condition for rush shipments any time. Write for prices and variety list.

C. E. WILSON NURSERIES
Box 1149 Jacksonville, Texas

ROSEBUSHES—Most complete list offered in East Texas. 2-year plants, grown right, graded right, packed right. Prices consistent with quality of stock and service rendered. Wholesale list just off the press. Ask for your copy now before stock is broken.

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California Privet, 2-yr., row-run, 2 to 5 ft. Cut back as 1-yr. Heavily branched, \$60.00 per 1000. No shipping. Write for quantity prices and delivery arrangements in our truck.

French Lilacs, 1-yr. grafts, \$25.00 per 100. French Lilacs, orders taken for winter grafts, \$15.00 per 100.

Biota orientalis, 1-yr. adgs., 3 to 5 ins., \$20.00 per 100. Biota orientalis, 1-1 transplants, 5 to 12 ins., \$60.00 per 1000.

Cydonia japonica, 1-yr. adgs., 6 to 12 ins., \$5.00 per 100.

California Privet, 8-in. hdwd. ctgs., winter delivery, \$2.50 per 1000.

EVERGREEN ACRES
R. D. 2, Middletown, Del.

LINING-OUT STOCK
Fall, 1947—Spring, 1948

Berberis thunbergii, 1-yr. adgs., Per 1000

3 to 6 ins., \$10.00

6 to 9 ins., 20.00

9 to 12 ins., 30.00

Berberis thunbergii atropurpurea, 1-yr. adgs.

3 to 6 ins., 25.00

6 to 9 ins., 40.00

9 to 12 ins., 65.00

Packing at cost. No charge for packing when cash is sent with order.

GULF STREAM NURSERY, INC.
Wachapreague, Va.

RED JAP. MAPLE SEEDLINGS
Acer Palmatum Atropurpureum.

Carefully selected for good color.

Per 100

10 to 12 ins., \$55.00

8 to 10 ins., 45.00

6 to 8 ins., 35.00

Acer Palmatum, 1-yr. seedlings.

Per 100

8 to 10 ins., \$22.00

6 to 8 ins., 16.00

4 to 6 ins., 12.00

Fall delivery. Cash with order.

ELWOOD HUBBS
204 Delaware Ave., Palmyra, N. J.

SHRUB LINERS FOR IMMEDIATE DELIVERY

Each

300 Hydrangea A.G., 8 to 15 ins., \$0.10

300 Spiraea foebell, 8 to 15 ins., .05

400 Spiraea billardi rosea, 8 to 15 ins., .05

400 Philadelphus, Bouquet Blanc, 6 to 15 ins., .06

400 Philadelphus grandiflorus, 6 to 12 ins., .05

1000 Regel Privet, true, from cuttings, 6 to 12 ins., .04

Snowball, 3 to 6 ins., .08

Packed free.

SCOTCH GROVE NURSERY, Scotch Grove, Ia.

FALL 1947, SPRING 1948

1-yr. Berberis thunbergii seedlings.

Per 1000

4 to 6 ins., \$10.00

6 to 9 ins., 20.00

9 to 12 ins., 30.00

Berberis thunbergii atropurpurea seedlings.

Per 1000

4 to 6 ins., \$25.00

6 to 9 ins., 40.00

9 to 12 ins., 65.00

WILMS NURSERY, Salem, Ohio

Berberis thunbergii, 4 to 6 ins., \$1.00 \$ 7.50

Berberis thunbergii, 6 to 10 ins., 2.50 20.00

Berberis thunbergii atropurpurea, 3 to 6 ins., 2.00 17.50

Cornus florida, understock, 4.50 40.00

Cornus florida, 12 to 15 ins., 5.00 50.00

Sorbus aucuparia, 18 to 24 ins., tr. 10.00 90.00

Sorbus aucuparia, 2 to 3 ft., tr., 15.00 140.00

Sorbus aucuparia, 3 to 6 ins., 20.00 190.00

JACK BROUWER NURSERY
55 Lester St., New London, Conn.

LINING-OUT STOCK

Viburnum Dilatatum, 1-yr. adgs., \$45.00 per 1000.

Taxus cuspidata Upright, 2-yr. adgs., \$150.00 per 1000.

Cornus florida, 1-yr. adgs., \$45.00 per 1000. Samples on request.

Fall or spring delivery.

BOULEVARD NURSERIES
Newport, Rhode Island

BOXWOOD

Dwarf and Sempervirens. Nice green, heavy-rooted. 6 to 10-in. plants, \$10.00 per 100; 8 to 10-in. plants, \$15.00 per 100, 200 for \$25.00.

MRS. R. L. ROBINSON
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STUDY WINTER STORAGE.

Studies have indicated that fall planting of cherry and peach trees and rosebushes may result in greater growth the following year than spring planting. In the experiments, which were carried on at the New York experiment station at Geneva, various conditions of winter storage with different plant materials were tested and spring and fall planting were compared.

In some years, according to Dr. R. W. Bledsoe, who did the work, there may be a poor survival of some varieties of trees when planted in the fall. This is especially true of peaches, he continues, since they cannot stand severe winters.

"Material which is dug for winter storage," states Dr. Bledsoe, "should be mature and have well formed terminal buds. A good per cent of the leaves should already have dropped." Work done in the past two years indicates that this is equally true of stocks to be planted in the fall.

The best storage temperatures were found to be slightly above freezing, with a relative humidity of eighty to eighty-five per cent. Different packing materials for the roots of these plants, such as shingletow, peat moss and sphagnum moss, were tried and compared. Those plants packed in sphagnum moss gave a slightly better growth when set out. The packing material was kept moist throughout storage.

During 2-year tests made with the Montmorency sour cherry, it was found that 1-year-old trees which had lost most of their leaves in early fall and had mature buds and hard wood gave better growth the following year than did trees which had to have their leaves stripped when dug. This hardening off may be encouraged by not cultivating late in the season and abandoning the use of late applications of fertilizer. The pruning of roots, if done at the correct time, might also stop growth and hasten maturity.

FRUIT TREE BUDDING AND GRAFTING METHODS.

[Concluded from page 13.]

slightly higher percentage of unions will result. After the union takes place and growth of the scions is established, the weaker scion is removed in order to avoid the weak crotch which would result if both were allowed to remain. If only one scion grows, it is, of course, only necessary to prune away the dead one. In both whip and cleft grafting the scion piece should be four to six inches long and the upper cut protected against drying with wax.

As those who practice budding and grafting know, these two methods of propagation are really much simpler to perform than these descriptions may possibly indicate. By using care and keeping in mind the basic principles involved, a fair degree of success should result from the beginning. Speed, however, is only achieved through long experience.

The number of nurseries which today produce fruit trees on special stocks, whether they be improved commercial stocks or the dwarfing stocks, is quite limited, and there are comparatively few nurseries producing trees top-worked to several varieties. Such specialty items, while they probably will not move in large quantities, nevertheless are in demand by home gardeners especially, and the prices which can be secured for them warrant the extra labor involved. Furthermore, the availability of such items attracts attention to your nursery and paves the way for other sales.

THE Zelg Nursery, Route 1, Burke, Va., was recently purchased by Mr. and Mrs. Joseph S. G. Genovese, who will grow ornamentals, evergreens and boxwoods.

H. ERNEST CONWELL has sold the Boxwood Nurseries, specializing in buxus, and the Diamond State Evergreen Co., supplying holiday decorations, both at Milton, Del., to J. Kenneth Douglas, a native of Milton. Mr. Conwell will continue with him for a year.

LEE MOSTY, of the Mosty Nursery, Center Point, Tex., and father of Raymond Mosty, president of the Texas Association of Nurserymen, visited Fort Worth recently, accompanied by his wife. They had traveled several thousand miles through the south and had visited nurseries and florists' shops at Knoxville, Tenn.; St. Louis, Mo., and Kansas City, Mo.

Letters from Readers

HETP FOR RED SPIDER AND SCALE INSECTS.

In the October 1 issue of the *American Nurseryman* you have an article entitled, "HETP for Red Spider," and I should like to add my observations and results achieved from using HETP on evergreens for the control of red spider and young scale insects. I am employed as manager of the sales ground of the Dunn Nursery Co., Painesville, O., which is owned and operated by Thomas G. Dunn.

I used HETP in the commercial form of Vapotone, properly mixed with water in prescribed proportion, with one-half pound of dry lime-sulphur added to kill the eggs, as HETP by itself kills only the adults. The first application was applied August 15 on a block of 1,500 pyramidal arborvitae, three to four feet in height and heavily infested with red spider. The results were checked the following day, and many spiders were still present, but the second day revealed fewer insects, and by the third day approximately eighty per cent had been killed. Five days later a second application was made, and results were good; the two applications killed about ninety-five per cent of the red spiders.

The next block sprayed included 500 globe arborvitae, also heavily infested with red spider, and the same solution was used. This block was also infested with terrapin scale. The nymphs of the female lecanium had emerged from beneath the protective covering of the female and were sucking the sap from the stems and foliage. Since I did not expect HETP to be effective on these nymphs, it was a pleasant surprise to find that it had killed approximately fifty per cent of the young nymphs. After the second application, at least seventy per cent of the lecanium scale present on the globe arborvitae was killed along with ninety per cent of the red spiders. I believe that a third application of HETP would give nearly a perfect kill of the lecanium scale.

The HETP solution was applied with 450 pounds of pressure throughout the entire day during the hot month of August with no burning effect on the evergreens. I hope that I have helped show the promising qualities of HETP on evergreens for the control of red spider.

William M. Ostrander,
Mentor, O.

TWO SILVER BELLS.

Harlan P. Kelsey is on firm ground in objecting (*American Nurseryman*, October 15, page 23) to statements regarding the hardness of *Halesia monticola* in the reported account, appearing in the September 15 issue of the *American Nurseryman*, of a discussion of "Adaptability and Source of Supply of Some of the Newer and More Unusual Trees," led by myself at the National Shade Tree Conference at Cleveland.

Halesia monticola is an excellent ornamental, which is anything but "tender in zone VII." To the best of my knowledge, it is completely hardy in Massachusetts and upstate New York, which would throw it at least into zone V. Confusion evidently stems from a statement I made regarding the hardness of the two-wing silver bell. *Halesia diptera*, readily identified by its 2-winged instead of 4-winged fruits. Successive editions of Rehder's Manual have variously classified *Halesia diptera* as zone VII or VI, with the implication that it is less hardy than the mountain silver bell. Other statements have

been made that it makes a considerably smaller tree with fewer flowers.

From observation of a single specimen of the two-wing silver bell at the Morris Arboretum, now a fine upright tree about forty-six feet in height (a companion specimen of *H. monticola vestita* of the same age is forty feet or less) I am inclined to question two of these points, all three of which entered the discussion at Cleveland. If it actually has a few less flowers than *H. monticola*, on this specimen they are certainly larger and the net effect is about the same. It is already a third again as high—as it should be, according to prevailing height classifications—and shows no present signs of slowing up, and no question of its complete hardness has ever risen at Philadelphia. Comments on its behavior in colder regions would be appreciated. In the meantime it is our feeling that its good upright habit, bold foliage and especially its two weeks later blooming period than *H. monticola* entitle

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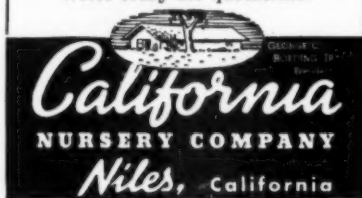
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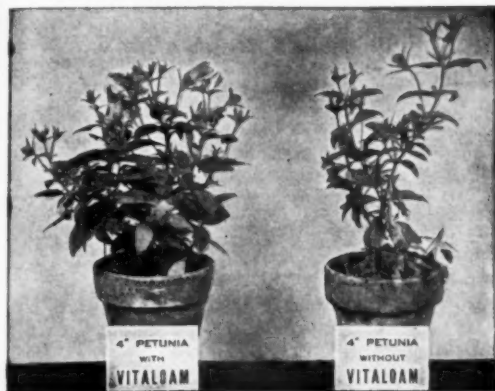
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the twowing silver bell to comparable consideration as an ornamental.

Henry T. Skinner.

HARDINESS OF WOODY PLANTS.

[Continued from page 20.]

much harder than are other kinds. For example, the butternut is harder than the eastern black walnut, and the almond is harder than the tung tree. Hardiness is only a relative term and can be determined only when the different kinds of plants are in the same physiological condition as regards growth or activity. Just what it is that makes a difference in the hardiness or ability to withstand low temperatures without injury is not known. However, over the years, experience and research have taught us that there are a number of factors that affect the hardiness of woody plants.

There is a great difference between the temperature that will cause injury to a tree tissue when it is in active growth and most tender in the spring and that required when it is most resistant in midwinter. With some trees this difference in temperature is as much as 50 to 60 degrees or even more. With woody plants, the tissues are least hardy in spring when

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they are growing rapidly, and as the season progresses hardness normally increases provided that second or late growth does not occur. There are many changes that take place in the tissues of a tree as hardness is developed: The moisture content is reduced; cell walls are thickened; the concentration of sugars, starches and other carbohydrates becomes greater; there is the formation of pentasans, gums and waxes, and the respiration and other life processes become slower. However, none of these offer a full and satisfactory explanation of why the plant becomes as resistant to cold as it does. All of these changes and probably many others play a part in developing hardness in woody plants.

Maximum hardness is developed only by trees that support a large area of normal leaves continuously from the time of foliation in the spring until late fall when they are killed by frost. Attacks by insects or diseases that injure the leaves or cause partial or complete defoliation at any time during the spring or summer, or before the occurrence of frost in the fall, not only prevent the development of maximum hardness of the trees, but such defoliation results in reduced growth of the trees and in poor filling of the nuts. The importance of maintaining a large area of healthy leaves on the trees during the entire growing season can hardly be too strongly stressed. This is because trees that hold their leaves are strong, vigorous trees and are the ones best able to withstand cold, as well as other adversities, without injury. This, however, does not mean that fertilizer applications should be made in late summer or that cultivation should be practiced at that time which would tend under suitable conditions to stimulate late growth of the trees. This is because some trees like the Persian walnut are slow to go into rest at best, and practices that stimulate late growth of the trees cause them to be susceptible to cold injury especially in late fall or early winter. I have seen severe injury and killing of pecan trees in south Georgia as a result of spring fertilizer applications, which because of drought, did not become available to the trees until late August and early September and then caused second growth of the trees.

In the case of walnuts and pecans especially, but also others that are not sprayed for the control of diseases and insects, it is not uncommon for the trees to become defoliated in late summer and while bearing a crop of nuts. Often this premature defoliation results in the production of a

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new crop of leaves and some shoot growth. This is one of the worst conditions one can have in an orchard, for the nuts are certain to be poorly filled and the trees especially susceptible to cold injury.

In such a case as this, the nuts withdraw carbohydrates, proteins and minerals from the leaves and wood of the tree for their development, and the production of new leaves and shoots has a like effect. This all results in such a severe removal or using up of the materials involved in the development of hardness that such trees are very susceptible to cold injury.

Woody plants to be resistant to cold injury must be well nourished. Unbalanced mineral nutrition of trees is an important factor in determining the amount of injury they may sustain from cold weather. In the various parts of the United States the soils on which fruit and nut trees are grown generally do not supply in adequate amounts some one or more of the essential elements required in their nutrition. This condition results in unbalanced nutrition, in that too much of certain elements is absorbed by the trees and too little of certain other elements. Under severe conditions this causes the leaves to be abnormal in size or in form, for them to be chlorotic or to scorch or burn, or for them to drop prematurely. Such leaves do not function properly; they are not able to carry on photosynthesis at a normal rate and hence do not make sufficient plant foods of the proper kinds properly to nourish the trees. This results in disorders of various kinds said to be due to mineral deficiencies. Among those deficiencies that have been found to reduce tree growth and yield and to increase susceptibility to cold injury are boron, copper, iron, magnesium, manganese, nitrogen, phosphorus, potassium, zinc and others. In all cases the corrective treatment to be given consists in supplying the trees with the element or elements in which they are deficient. These must be supplied in an available form and by such methods that they can be absorbed by the trees.

The size of the crop of fruit or nuts borne by a tree and the length of time between harvest and a killing freeze are important factors in determining the cold resistance of fruit or nut trees. In test winters many cases have been observed in which trees that matured heavy crops during the previous summer were severely injured. Cases have been observed in which the degree of cold injury sustained has been largely in proportion to the size of crop matured the previ-

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ous growing season. Trees that mature the crop of fruits or nuts late in the season may be less hardy than those that mature the crop early. It seems not only that some material or materials are made in the leaves during late summer or early fall which move out of them into the wood and cause it to become resistant to low temperatures, but that when a tree is maturing a crop so much of this material goes into the fruits or nuts that if the season is not a favorable one the wood may not attain its maximum hardness. We have learned that a high percentage of certain minerals, carbohydrates and oil that go to make up the kernels of the oily nuts are transported into them during a period comprising a month to six weeks before they are mature. In the production of a heavy crop the amount of minerals and elaborated food materials such as proteins, carbohydrates and fats removed from a tree is very large. If the trees do not carry a large healthy leaf area at the time of harvest or if there is a killing frost at that time, the leaves have no opportunity to elaborate more carbohydrates and other materials to replace those removed in the crop; as a result, the trees do not develop maximum hardness.

To cite an outstanding example of this effect of the crop on hardness, I want to describe some observations I made several years ago. The late J. B. Wight, of Cairo, Ga., had a few hundred Satsuma orange trees that bore a heavy crop of fruit. The fruit had all been harvested from certain of these trees for two weeks or more before the occurrence of a freeze the last of November. From other trees the fruit crop had only been partially harvested and none had been harvested from most of them. The day and night temperatures had been warm, but there was a rather sudden drop into the low 20's during one night with the result that all of the trees from which no fruit had been harvested were killed to the ground. The trees from which a part of the fruit had been removed were defoliated and all but the large limbs were killed. The trees from which all the fruit had been removed two weeks or more before the freeze were defoliated, but little or no injury to the wood occurred. The severe injury was probably because the materials making for hardness in the wood had been transported to the maturing fruits and the temperature dropped quickly before the trees had time to develop cold resistance.

It is a well known fact that many kinds of nonwoody as well as many woody plants develop hardness or

BOOKS ON LANDSCAPE SUBJECTS

Several of the recommended standard books on landscape design and planting, including some of recent authorship, are out of print, probably for some time. Of the books now available, the following are considered the most useful. Since they treat different aspects of the subject, each is described in some detail, so that those seeking such books may be able to select that nearest fitting their needs.

PLANTING DESIGN, by Florence Bell Robinson (\$3.00).

The most up-to-date book of its kind. A practical discussion of the various factors of design and their application, such as color and its use, texture, art of design, groupings and arrangements; ecological factors, such as soil, climate, light and drainage; designing plantings around buildings and public plantings.

HOW TO LANDSCAPE YOUR GROUNDS, by Loyal R. Johnson (\$3.00).

Discusses the steps taken by the small property owner in planting his grounds, including the architectural features, walks and drives, lawn, trees and shrubs and various types of gardens. Select lists of plants for various purposes are included. The important feature of the book is a series of planting plans and keys for different regions of the United States.

TREES AND SHRUBS FOR LANDSCAPE EFFECTS, by Marian Cruger Coffin (\$3.00).

Chiefly concerned with the materials for landscape planting. Many fine pictures illustrate the author's comments on the uses of woody plants. Successive chapters discuss the trees and shrubs for gardens, the approach to the house, its setting, and the various sorts of landscape treatment of plants for various purposes, and they are derived from the author's experience as a landscape architect.

LANDSCAPING THE HOME GROUNDS, by L. W. Ramsey (\$2.00).

Explains in simple terms how to develop the home grounds, including all elementary phases of landscape design and planting. Numerous pen sketches, charts and photographs clearly illustrate each point.

GARDEN DESIGN, by Marjorie Sewell Cautley (\$5.00).

Discusses the principles of abstract design as applied to landscape composition, color composition, decorative elements and ornaments. A classification of foliage plants according to color and texture occupies one-third of the book. Simple definitions of the terms of architects and designers are supplemented by numerous sketches. Provides an understanding of artistic terms and principles, as well as their application.

GARDEN PLANNING AND BUILDING, by Stuart Ortloff and Henry B. Raymore (\$2.75).

Detailed directions for the homeowner on basic landscape design; lawn making; designing flower gardens, woodland and wild gardens, rock gardens, playground and game areas; the circulatory system, soil fertility.

YOUR BOOK OF GARDEN PLANS, by Norman A. Morris (\$3.50).

Gives suggestions for the use of plant materials along with illustrated plans for home grounds. An excellent book to recommend to the amateur.

These books and others on horticultural subjects are available at the publishers' price through the

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cold resistance on exposure to gradually falling temperatures. This change, in the case of nonwoody plants such as cabbage or wheat, is spoken of as hardening off. It is not known how important this is in developing cold resistance in flower and leaf buds of woody plants. It is quite possible that buds which have become extremely tender as a result of rapid growth might become quite resistant to low temperatures, just as do wheat or cabbage, if held for some time in that stage by temperatures too low for growth.

Generally speaking, the greatest amount of cold injury to the buds or aboveground portions of a tree occurs on a single night. The length of the cold period is of only indirect importance as influencing the rate of temperature fall or the acquiring of cold resistance by the trees. Trees that are subjected to low temperatures over a considerable period of time are not nearly so likely to be injured as are those that are subjected to a low temperature suddenly. That is really why there is so much severe cold injury to woody plants in the south. In the deep south freezing weather may be uncommon, but when freezes do occur, usually they follow a period of comparatively warm weather and the temperature falls quickly. It is this sudden change

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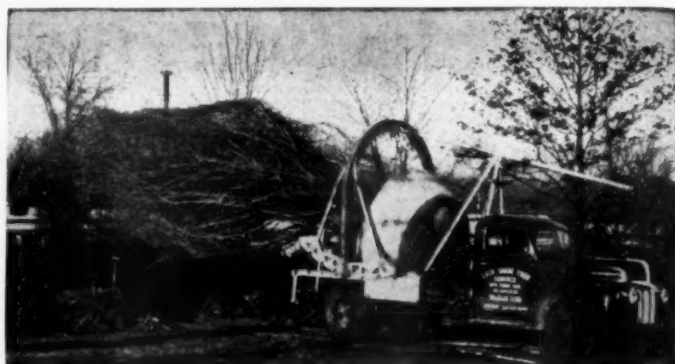
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in temperature that causes the severe injury. Two different places may have had the same mean monthly temperature, yet at one place severe injury may have occurred and no injury at the other place with plants normally having equal hardiness. A careful analysis of the situation, however, would probably show that at the place where the injury occurred a period of warm weather had existed which was followed by a rapid drop in temperature to a killing low on a single night, whereas the trees at the place where no injury occurred were not subjected to such changes in temperature. On the other hand, injury to the roots usually occurs only after prolonged periods of cold weather. This is largely because the soil cools slowly and it requires a long period of cold weather to reduce the soil temperature sufficiently and to such depths as to cause injury to the roots.

Under northern conditions where low temperatures for a rather long period are sometimes experienced, injury to the portion of the trees above-ground may occur as a result of drying out of the wood. It is well known that a cake of ice will gradually evaporate and disappear when in the open and exposed continuously to below-freezing temperatures. We all know that the family wet wash when hung on a line and frozen will soon dry especially if the wind blows. The principles operating in these cases may cause severe injury to trees. In the wintertime the root systems of trees take up water from the soil that is not frozen, and this water moves in the tree to replace that lost by evaporation. Under conditions where the soil is frozen to such an extent that the water absorbed by the roots is continually less than that lost by the top of the trees by evaporation, drying out of the top occurs. If this is continued over a period of time, a dryness of the wood and other tissues occur that causes the death of the dried-out portions. This type of injury does not show the typical symptoms of cold injury, but rather those of drying out. The conditions that are most likely to cause such injury are a soil frozen to the effective rooting depth, a dry atmosphere and a moderately high wind velocity. Injury of a similar nature to that just described often affects trees transplanted in late fall or early winter, especially those that did not have their tops cut back to balance the loss of roots sustained in transplanting. During even mild winters the tops of such trees dry out to such an extent that the small branches and even the leader may die. In extreme cases the entire top may die back to the



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root. In planting bare-root trees, regardless of the time of the year, they should be rather severely cut back immediately after transplanting to prevent such drying out and dying back of the wood. Cut-back trees generally will make more growth the

first season following transplanting than will similar trees not cut back.

One of the most common types of injury to young nut trees as well as others is that known as sunscald or winter injury. This occurs generally on the south or southwest side of

the trunk and for some distance between the ground and the head of the tree. Usually the injury is not evident until a year or so after it occurred, and then it may be observed as a narrow strip of discolored and sunken bark which may crack where it meets the live tissue. This dead or injured area is usually invaded by borers of one or more kinds. This so-called sunscald injury is thought to be caused by the alternate freezing and thawing of the tissues on the south and southwest sides of the tree. On a bright, sunny day, even though cold, the sun's rays striking the bark of the tree quickly raise the temperature of the bark and wood. When the sun is obscured by clouds or at nightfall the temperature of the tissues drops rapidly and they may freeze again. It is thought that the rapid and rather great changes in temperature of the bark and wood is the primary cause of sunscald. Whatever the cause, we know that it can be prevented by shading the tree trunk. This can be done by heading the trees low so that the branches shade the trunk, or by shading the south side of the trunk with a board six or eight inches wide, or by wrapping the trunk with burlap or similar material. Much of the injury to Chinese chestnut, pecan and hickory trees, especially, is caused by inexperienced growers who cut off the low branches in an effort to raise the head of young trees. The Chinese chestnut generally forms a very low-headed or bush-type tree. Most of the cold or winter injury I have seen on Chinese chestnut trees has been on the trunks and has resulted from removing the lower limbs so that they were not shaded.

Hardiness in woody plants is only a relative term and is determined by the condition of the plant at the time the low temperature occurs. Woody plants are most tender when they are most actively growing and most resistant to cold injury when they are in deep or profound rest. Strong, vigorous, well nourished trees are much more resistant to cold injury than weak, poorly nourished trees. Hence, the successful grower makes an effort through disease and insect control and proper fertilization and cultivation to keep his trees strong. These practices should be so carried out that the trees will make a strong, vigorous growth in the spring and early summer and then go into rest without a second or third flush of growth. The trees should carry their leaves until frost as there are some things made in them that cause the trees to develop resistance to cold injury. Winter or cold injury can destroy in a

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single night the hopes and expectations of several years' work, but in the main, if one grows well only those plants that are suited to the environment such losses are rarely experienced.

PLANT NOTES.

[Continued from page 24.]

is often beautifully spotted white, and its reddish flowers, violet with age, are produced on 8 to 10-inch stems, generally more dwarf than saccharata forms, which may grow as tall as twelve or fifteen inches.

Two kinds with unspotted green leaves, *P. angustifolia azurea*, sometimes erroneously listed as *coerulea*, and *P. rubra*, are available in this country. The latter is what Bowles calls, in his book, "My Garden in Spring," "the best of all the red ones." Other people are quite apt to agree with him, for its bright coral color, soft scarlet-red, according to Bowles, is more pleasing than any red shades one is apt to find among saccharata seedlings, or at least any that I have seen.

The other species, *P. angustifolia azurea*, likewise may be called the best of the blues. There is apparently some variation in the shade of blue in plants in this country, although the general color may be described as deep azure. It is a neat grower, with low tufts of dark green leaves and flowering stems to a height of eight inches, or perhaps a foot in rich soil.

Several other forms are mentioned in the books, although they appear to be quite unknown in this country. Kinds like *P. arvenensis*, in both white and blue, and several purple-flowered ones, including *P. grandiflora*, are some species for which the inquisitive grower might work.

The cultural needs of these lungworts will indicate their value, especially as undercovers in shrub borders or as edgings where their moisture needs can be supplied. In the north they lose all their leaves in winter; in more temperate sections all saccharata forms are said to retain their handsome leaves throughout the year.

Wall Cresses.

More than ten years ago I planted a sunny wall for a client using among other plants a number of wall cresses. As I had not seen the planting for several years, I was interested this summer, when I inspected it, to find that several of these cresses were among the finest ornaments left. It prompts a few words in their praise.

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ings for perennial borders and, of course, practically all are good rock garden ornaments. One wonders, then, why more kinds are not found in nurseries. Aside from the three forms of *Arabis albida*, which most nurserymen know, few are to be found in any of the lists of specialists. If you are looking for something out of the ordinary, something that will attract customers by means of pretty foliage or flowers, or both, you may find it in the brief list of varieties which follows, all available in this country. *Arabis cerastoides* spreads into a mat of deep green and during May and June produces purplish-veined white flowers, large for its height of two inches. *A. ferdi-*



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nand-coburgi carries the white banner of the race, but the stems are up to six inches in height, and the blooming period falls in May and usually again in autumn. *A. kellereri*, said to be a 10-inch plant from the Balkans, blooms in early spring; if that is true, the plant in American trade under

that title cannot be correctly named. Be that as it may, the plant which I have had from three or four sources is a splendid little thing, making mats of gray rosettes from which spring 3-inch stems in spring bearing white flowers.

The three kinds mentioned before are accommodating performers that do well on little food or moisture and adorn any sunny well drained spot in a pleasing way. One could go on and on naming others of merit, but most would be mere aggravation, for they seldom are available. Two others, *A. procurrens* and *A. sturi*, both to be found in American lists, should be mentioned if for no other reason than that they do well in the partly shaded situations which are often hard to clothe. I do not know just how much shade they will stand, although I suspect they could get along on very little sunshine, for I have the first-named planted under a densely leaved cotoneaster and in other places as a ground cover under trees. In any case, they are two accommodating plants, making ever-increasing mounds of shining green leaves and raising clusters of white flowers in spring on 8-inch stems for the *procurrens* and 4-inch stems for the *sturi*. Most wall cresses are easily propagated by division, and the ones mentioned may be grown from cuttings at any time of the year that new growths are obtainable.

Soil for Natives.

A correspondent writes that he read a statement by an authority on western plants that *Lithospermum canescens* needs a well drained soil and lime. It has confused him, because he has read elsewhere that it is a plant for acid soil. It all shows that we should be careful about positive statements regarding preferences of plants as to acidity or alkalinity. So far as *lithospermum*, *puccon* of gardens, goes, I can say without hesitation that it favors highly acid soil in this section of Michigan, being found with bird's-foot violets and *Lupinus perennis* on jack pine plains.

I do not offer it as an infallible rule, but merely for what it is worth when I give the following as my guide, formulated after forty years' work with native plants. In the absence of positive information to the contrary, I give all plants an acid or neutral soil. I am convinced after much experimentation that many plants which supposedly want an alkaline soil and others of an acid complex can do well in a neutral medium. It is true, of course, so far as I have gone, that a majority of natives which possess noticeable beauty of leaf or



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flower and are the kinds we want in gardens naturally grow in soil that is either neutral or somewhat acid, from the slightly acid medium preferred by the Rocky Mountain columbine, *Aquilegia coerulea*, to the highly acid soil of trailing arbutus, *Epigaea repens*, and *Rhexia virginica*. It is a well known fact that the first of these can make itself contented in a neutral soil, and the same is also true of many others. If one follows the foregoing rules, not slavishly but with the sense which observation of a plant's appearance and origin tells any experienced gardener, much of the confusion about acidity and alkalinity will be removed.

ROOT KNOT NEMATODES IN SOIL AFFECT PLANTS.

Although seedlings of the Shalil variety of peach are being used by some orchardists for understocks resistant to the root knot nematode in replanting old orchard land in the sand-hill area of North Carolina, in two orchards planted with trees on Shalil rootstock root knot was found to be quite severe in 1945. In one of these orchards some trees were severely stunted, and a few were even killed by root knot.

It previously has been found that at times a low percentage of Shalil seedlings may become infested and that different populations of the root knot nematode vary in their abilities to cause root knot on various crops. When Shalil and Yunnan seedlings in some orchards became heavily infested with root knot, it was assumed that a strain of the root knot nematode adapted to these varieties had appeared. The question therefore arose as to whether Shalil roots in some orchards in North Carolina were highly susceptible to the root knot nematode because of genetic variation of the rootstocks or because of the presence of different races of the parasite in some orchard soils.

At the North Carolina experiment station, Raleigh, a preliminary test was made to determine whether Shalil seedlings from a known seed source were resistant to the root knot nematode population in various orchard soils. Samples of soil were taken October 17, 1945, around the bases of six trees in each of two locations in five orchards in which root knot was present. The soil from each orchard was mixed separately, and ten 8-inch clay pots were filled with soil from each orchard.

Shalil seedlings and natural seedlings grown in sterile soil were transplanted into these pots in January,

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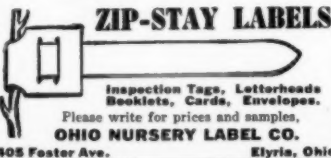
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Books for Christmas Gifts

These are the books the trade finds most helpful—any of them will be a welcome Christmas gift to a nurseryman friend, employee or to yourself!

Nursery Manual, by L. H. Bailey. Describes methods of propagation and lists plants with practice for each. 470 p., revised ed. (1920) **\$3.50**

Beginning in the Nursery Business, by John J. Pinney. Complete series of articles reprinted from issues of the American Nurseryman. Booklet. (1946) **50c**

Propagation of Horticultural Plants, by G. W. Adriance and F. R. Brison. Covers methods of propagation, including bulbs, layerage, cutting, budding and grafting. 314 p. (1939) **\$3.25**

Maintenance of Shade and Ornamental Trees and Shrubs, by P. P. Pirone. Up-to-date, original and comprehensive—on pruning, surgery, pest control and other care. 420 p. (1941) **\$5.00**

Handbook of Fertilizers, by A. F. Gustafson. Source, composition, effects and application of commercial fertilizers. 172 p., revised edition. (1944) **\$2.00**

Hortus Second, compiled by L. H. and E. Z. Bailey. Brings *Cyclopedia of Horticulture* up to date in condensed form. 778 p. (1941)..... **\$6.00**

Ornamental American Shrubs, by William R. Van Dersal. Tells how to grow shrubs with least effort and expense, how to gauge localities where given species are most likely to succeed and describes the first-class shrubs from important regions — rhododendrons, azaleas, ceanothus, hydrangeas, hollies and viburnums, as well as many remarkable and rare shrubs. 288 p., profusely illus. (1942)..... **\$4.00**

Developing Nursery Sales and Display Grounds, by Harold E. Hunziker. Ideas for displaying and selling nursery products from prize-winning designs for nursery sales and display grounds. Illustrated with large size reproductions of 28 plans. Shows how plans may be adapted to one's own nursery. 32 p. (1946) **\$1.00**

Compiling a New Nursery List, by L. C. Chadwick, 2 booklets. Selections of superior varieties of trees and shrubs in various sizes, vines and ground covers. Lists uses, culture, growth habits and characteristics for landscape purposes. Narrow-leaved evergreens, 64 p. (1941). Broad-leaved evergreens, 64 p. (1941). Each, 50c. Both for 80c.

Cultivated Conifers, by L. H. Bailey. Systematic record of 1000 species and varieties. Discusses culture, propagation and uses. 404 p. (1933) **\$7.50**

The Vegetable Growing Business, by R. L. Watts and Gilbert S. Watts. Guide for the commercial grower. One chapter on vegetable forcing. 649 p. (1939)..... **\$3.50**

Growing Tree and Small Fruits, by H. B. Knapp and E. C. Auchter. Covers marketing as well as orchard operations. 600 p. (1941) **\$2.75**

The Book of Trees, by A. C. Hottes. Helpful lists for various purposes. Treats transplanting, pruning and propagation. Describes important species. 448 p., 2nd revised edition. (1942) **\$3.50**

Pruning Trees and Shrubs, by E. P. Felt. Besides discussing general practices, gives specific advice on pruning trees, shrubs, hedges and fruits, line clearance and tree repair. 236 p., illus. (1941) **\$2.50**

The Book of Perennials, by A. C. Hottes. Discusses over 125 species and many more varieties, culture and propagation. 280 p. (1942) **\$2.50**

Garden Bulbs in Color, by McFarland, Hatton and Foley. 275 color pictures, with brief text describing each. 296 p. (1938)..... **\$2.49**

Gardening with Shrubs and Small Flowering Trees, by Mary Deputy Lamson. Lists shrubs for bloom, fruit, foliage, fragrance and for winter color. Also gives lists of evergreens, hedge and wall shrubs and perennial combinations. For beginners and advanced gardeners. 295 p. (1946)..... **\$3.00**

The Book of Shrubs, by Alfred C. Hottes. Tells how and when to plant, prune and spray and gives various lists of shrubs for many uses. Covers propagation, transplanting, pruning, soil requirements, etc. 438 p. Fourth edition. (1942) **\$3.50**

Diseases and Pests of Ornamental Plants, by Dr. Bernard Dodge and W. L. Rickett. Besides general chapters on diseases, insects and control measures, describes pests affecting some 600 species of plants in alphabetical order. First complete reference book of its kind. 638 p., illus. (1943)..... **\$6.50**

The Friendly Evergreens, by L. L. Kumlien. Covers the whole subject of evergreens. Seed collecting, propagation, nursery transplanting and root pruning, digging and transplanting balled evergreens and other cultural details, as well as insect pests and diseases, are discussed fully. 500 illustrations, 82 of which are in color. 240 p. (1946)..... **\$6.00**

Spray Chemicals and Application Equipment, by J. A. McClintock and Wayne B. Fisher. Describes methods of using spray chemicals. Discusses insects and diseases controlled by the specific chemicals and relates methods of improving present pest control practices. Sprayers and dusters now available are described and about 300 illustrations of this equipment are shown. 300 p. (1945)..... **\$4.00**

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1946. One Shalil seedling and one natural seedling were planted in each pot. In one or two pots of the soil from each orchard, Yunnan seedlings were also planted. The trees were grown in a greenhouse until November, 1946, when they were removed and the roots examined for root knot.

The results of the examinations were presented in the April 15 issue of the Plant Disease Reporter by C. N. Clayton, associate research professor of plant pathology at North Carolina agriculture station. In soil from three orchards, Shalil roots remained entirely free from root knot, while fifty to seventy per cent of the natural seedlings were affected. Shalil and natural seedlings were equally susceptible to the populations of the root knot nematode present in the soil of the two orchards in which root knot was prevalent on Shalil rootstocks. Yunnan seedlings grown in a few of the pots reacted to the root knot nematode populations in the same manner as did the Shalil seedlings.

It was decided that these preliminary greenhouse data and observations in the orchards suggest that the occurrence of root knot on Shalil rootstocks in some orchards is more likely the result of races of nematodes capable of causing root knot than of variations in the host.

CATALOGS RECEIVED.

Chase Nursery Co., Chase, Ala.—Wholesale price list of trees, shrubbery, roses and nurserymen's supplies, 48 pages and cover, 4 $\frac{3}{8}$ x8 $\frac{1}{8}$ inches.

Leghorn's Evergreen Nurseries, Cromwell, Conn.—Wholesale price list of evergreens, 6 pages, 4x7 $\frac{1}{2}$ inches.

Carlton Nursery Co., Forest Grove, Ore.—Retail catalog, illustrated in color, of fruit trees, nuts, berries and roses, 40 pages, 8 $\frac{1}{2}$ x11 inches.

Azalea Glen Nurseries, Loxley, Ala.—Wholesale trade list of camellias and azaleas, 4 pages, 4x9 inches.

Semmes Nurseries, Semmes, Ala.—Wholesale catalog, illustrated in color, of camellias, azaleas, magnolias and evergreens, 52 pages, 4x9 inches.

Willis Nursery Co., Ottawa, Kan.—Wholesale list of shrubs, evergreens, roses and bulbs, 24 pages and cover, 5 $\frac{3}{8}$ x9 inches.

C. R. Burr & Co., Inc., Manchester, Conn.—Wholesale price list of shrubs, vines, roses and trees, 24 pages and cover, 4x9 inches.

Blackwell Nurseries, Semmes, Ala.—Wholesale catalog, illustrated partly in color, of azaleas, camellias and evergreens, 32 pages, 6 $\frac{1}{8}$ x9 $\frac{1}{4}$ inches.

Magnolia Gardens & Nurseries, Charleston, S. C.—Retail price list of camellias, 24 pages and cover, 4 $\frac{3}{4}$ x7 $\frac{1}{4}$ inches.

Norman Nursery & Flower Shop, Phoenix, Ariz.—Retail catalog, illustrated in color, of trees, shrubs, fruits, nuts and flowers, 32 pages, 7 $\frac{3}{4}$ x10 $\frac{3}{4}$ inches.

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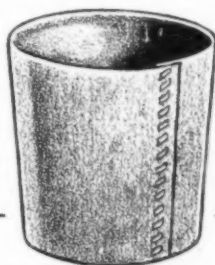
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Approx. Weight Per 100	35 lbs.	52 lbs.	78 lbs.	88 lbs.
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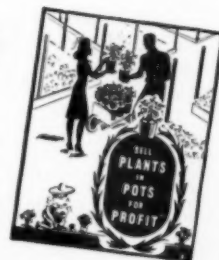
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Canaert Juniper, XXX B&B, 3½ to 4 ft.	5.75
Canaert Juniper, XXX B&B, 4 to 4½ ft.	6.75
Dundee Juniper, XXX B&B, 3½ to 4 ft.	5.75
Douglas Fir, XXX B&B, 2½ to 3 ft.	3.00
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(Extra-heavy specimens)	
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